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### The Forty-Two Cent Basis

CRUDE rubber buyers are warned that if they do not sustain the price of Malayan and Ceylon plantation crude so that it will average at least 1 shilling and 9 pence (practically 42 cents) a pound for the three months ended July 31, the quantity of rubber which may be exported at the minimum duty will be reduced from 100 per cent of standard production to 80 per cent.

Anticipating the advance from the 36 to the 42-cent basis, apologists for the Stevenson Act hasten to reassure rubber buyers that the announcement is not meant as a trade bludgeon, but merely as a notice of the export committee's intention to correct a weakness in the restrictive measure. Other defenders of the price-raising device bluntly declare that it is simply a stern rebuke to buyers for their reluctance to cooperate substantially with sellers. In fact, buyers are told that had there been cooperation the restriction net might never have been tightened at all, that is, an artificial scarcity of rubber might never have come to pass.

What the restrictionists mean by cooperation is not quite clear. If any plans were suggested by sellers for concerted action, buyers fail to recall them, but they do vividly remember various schemes proposed for marshaling the planting hosts so that they might present a united front to the common "enemy," the manufacturing interest. Not clear and convincing either have been the explanations given for the apparent manipulation of the prices of crude rubber a short time ago by planters' agents in order to get an advantage under the restriction plan.

That able economist Dr. Julius Klein said in a recent address: "Obviously the American public is going to have to pay for its rubber as much as the foreign control decides to make it pay, and while continued national conservation in the use of rubber goods will reduce our rubber bill, this remedy is not one that will save the situation, or that will assure an unrestricted supply of this essential commodity. In fact, such a costly expedient, amounting as it does to partial stifling of consumption, is the antithesis of healthy trade. It is but one of the inevitable steps in the vicious circle originally set in motion by the artificial curtailment of supplies, hectic speculation, exorbitant prices, confusion in the legitimate elements of the industry and the resort to substitutes which might well undermine the whole trade eventually.

"By its very success as a temporary stimulant to prices, such a government control is all too apt to be fastened upon other trades and, as in the case of all stimulants, the fight for abandonment is waged with ever-increasing difficulty. The desire of the speculative element for more and quicker profits regardless of the consequences to the other elements in the trade soon results in further exploitations of the governmental connection with the trades with inevitably costly results to the consumer."

### First Jungle Disease Survey

DESPITE the well-earned dominance of the rubber plantation industry of the East Indies, the impression is growing that the region named will not always possess the world's greatest reservoir of rubber with its attendant advantages. It is possible that within the next generation the supremacy of the East Indies in this respect will be challenged by the former ruler of Rubberdom, Brazil. Few facts are better established than that conditions in

the Amazon Valley are suitable for growing a world's supply of the best of rubber, and quite familiar, too, are the attractive commercial possibilities of rubber cultivation in the vast original home of the greatest of rubber-yielding trees, the Hevea; and yet, on the other hand, there has been a woful lack of information regarding the less roseate side of the planting proposition, the adverse factors with which Brazilian rubber raisers would have to contend.

It is such needed knowledge that the United States Department of Agriculture supplies in generous measure through its Bulletin No. 1380, "A Pathological Survey of the Pará Rubber Tree (*Hevea Brasiliensis*) in the Amazon Valley," the work of James R. Weir, who accompanied the joint expedition of the Departments of Agriculture and Commerce investigating the sources of crude rubber in the Amazon Valley. Indeed, it may be fairly claimed that the report, embodying the first survey yet made of diseases of rubber trees in their native jungle, is the most valuable product of the half-million dollar expedition. It is probable that on this intensive study of the growths inimical to rubber trees will be based most of the measures to protect against diseases the crop that must be planted in the Amazon Valley when wild rubber collection is possible only in the most inaccessible areas.

In this hitherto-neglected field Mr. Weir found not only parasitic and other tree foes already well overcome in Far East rubber-growing regions, but a great many others that appear to be indigenous to the Amazon country. In fact, he lists alphabetically and describes in detail a total of 334 fungi, 10 mistletoes, and 4 algae, besides 22 causes of discoloration of prepared crude rubber. The great number of authorities cited in the bibliography also evidences most extensive research. Such a catalog may affright some timid prospector, but there is no excuse for faintheartedness. Our fate is but the common fate of all. In the Orient conditions quite as adverse as in Brazil had to be surmounted. Vigilance and incessant warfare on plant enemies are the price of a successful crop anywhere. Mr. Weir says that there is no reason to believe that the diseases of Hevea encountered in the Amazon Valley cannot be successfully combated if proper precautions before and after planting are taken; and he even deems it possible to bring to the planted Hevea a considerable degree of immunity.

### Vast Botanical Gardens for California

THE California Botanical Foundation, with plans to use \$20,000,000 in a vast botanical garden near Los Angeles, is rapidly preparing to function. The beginning will be with 4,000 acres of land and \$5,000,000. Of vastly greater import, however, is the approaching visit of Dr. H. A. Hill, director of the Royal Botanic Gardens, Kew, England, and the cooperation of Dr. H. A. Gleason of the New York Botanical Garden, Dr. H. M. Hall of the Carnegie Institution, and scores of others of note in

the botanical world. The site chosen is wonderfully adapted for the growth, out-of-doors, of trees and plants of the temperate zone, as well as many that now flourish in the sub-tropics.

Such an institution so situate and amply endowed should do for American-grown rubber what the Imperial Department of Agriculture through Kew has done for British rubber plantations. Centered in the beautiful Mandeville Canyon, close to great libraries and institutions of learning, not far from the great guayule experiment fields; with fertile valley, high mesa and desert tracts all within reach, every rubber producer on the Pacific will have a chance to prove itself.

California—rather the whole of America—may congratulate itself upon this wonderful broad visioned plan.

### Rubber Latex in Colors—Perhaps

THE German scientist Fritz von Behr, who has been changing the natural colors of growing trees to any color or shade desired, has taken a position with a Maine lumber company. There he has amazed old time lumbermen with the beauty and permanence of his colored wood. The process is simple—boring holes into the trunk of the tree, attaching cans of dye, the coloring matter being transferred to the tissue by the sap. A later experiment, perhaps, will be the coloring of rubber latex while it is still in the tree. The work done by Hopkinson, Schidrowitz and others with freshly gathered latex has proved of the greatest value commercially. Perhaps, they or others, starting at the source, may one day produce colored, compounded, anti-oxidizing latex, and thus bring plantation and factory a step nearer to each other.

SIR JAMES STEVENSON, THE ABLE AND ACCOMPLISHED British patriot, has passed away. Whatever may be felt of him because of the Restriction Act, by its friends or foes, of the man himself there remains nothing but respect and honor. He made history and his name will live.

NINETY-EIGHT MILLION TIRES RUNNING ON THE MOTOR vehicles of the world is the figure gained by scanning the automobile census lately published by the Department of Commerce. Add to this some 20,000,000 spares and 10,000,000 in stock and there is a grand total of 128,000,000 tires. Visualize also the inner tubes, and rubber accessories that are necessary. Concomitants and the amount of rubber in use is tremendous; 700,000,000 pounds is estimated, which is one reason rubber is high.

A PREDICTION GOING THE ROUNDS OF THE PRESS IS THAT roads are becoming so good that pneumatic tires will soon be superseded by solids. A good way to explode this fallacy is to pump balloon tires up to say ninety pounds and run a few miles on smooth roads. Or ask any expert motor manufacturer with regard to vibration as between the two types of tires.

# A Glossary of Words and Terms Used in the Rubber Industry—XXI<sup>1</sup>

## Insulation—Wires—Cables—Tapes—Compounds

### Cable—Continued

**Motion Picture Machine Cable.** A conductor adapted for use with cinema projecting instruments, cranes, controllers, and searchlights, where there is danger of overheating; core consisting of strands of very flexible bare wire, gage usually ranging from 4 to 14 A. W. G.; insulated with heavy asbestos braid, and impregnated with a special compound to give it a smooth, moisture-proof finish.

**Motor or Brush Cable.** (1) A heavy, flexible, single conductor designed for connecting brush holders to field coils of motors and generators, or for general lead connections on power and lighting apparatus. Sizes range from No. 6 A. W. G. with 1,050 No. 36 wires to No. 18 A. W. G. with 65 No. 36 wires. Insulation, one braid of plain cotton with an overlay of black glazed cotton, either dry finished or varnished. (2) A type of higher voltage in which two layers of varnished cambric tape replace the double cotton insulation, with an overlay of black glazed cotton. A lead wire.

**Motor Lead Cable.** See Motor or Brush Cable.

**Multiple Cable.** A cable composed of several conductors usually four or more; a multicore cable.

**N-Conductor Cable.** A cable composed of N-conductors insulated from one another; a multiple-conductor cable; i.e., a cable made up of three or more conductors, insulated, and solid or stranded.

**N-Conductor Concentric Cable.** A cable composed of an insulated central conductor over which is laid concentrically tubular stranded conductors (ordinarily two or three) separated with layers of insulation; much used for transmitting alternating currents. See Concentric Cable.

**Office Cable.** A conductor for office or indoor service connecting a telegraph office with a main line.

**Phosphor Bronze Cable.** A flexible naval service conductor of braided phosphor bronze wire (valued for strength, although of lower conductivity than copper), cores insulated with rubber, and variously sheathed.

**Pilot Cable.** A term applied to a lead-sheathed cable or main having pilot wires (bare copper or brass strands about 1 mm. gage) wound spirally between the last and preceding layers of jute beneath the lead, the wires serving in a galvanometer test to locate faults and test insulation of electric networks by indicating leakage, as also serving to reveal differences in potential in parts of a main.

**Power Cable.** A cable designed chiefly for conducting high voltage currents for power purposes, and often employed in heavy lighting service. Types include the following:

**Feeder Cable.** A heavy or large capacity cable used as a lead for distributing current from a station to street mains. See Light and Power Feeder Cable.

**Graded Cable.** A cable for transmitting high tension currents, and the insulation of which is composite and so designed for economy and efficiency that the stronger dielectric is next to the conductor, where the disruptive voltage stress is greatest, while the less resistant insulating material is in the outer layers, being graded outward according to lessening inductive capacity toward the surface where stress is least. One type in general use is a cable with an interior wall of rubber as prime insulator and an exterior

wall of successive layers of varnished cambric, between which are thin layers of plastic insulating compound. See Power Cable, Rubber Gutta Percha Graded Cable.

**Graded Cable, Lead-Encased Core.** A power cable designed for exceptionally high voltage, one type of which has a core of nineteen 3.3 mm. wires stranded and encased in a close-fitting lead tube with an outer diameter of 18 mm.; insulation, three layers of rubber with thicknesses of 2.5, 2.3 and 4.5 mm., respectively, the innermost layer having a high content of pure rubber, the next a medium compound, and the outer one a heavier compound; then a layer of impregnated paper 5.2 mm. thick, and the whole encased in a lead sheath. See Graded Cable.

**Hemp Core Cable.** A cable, usually constructed to specifications, having a hemp center, and designed to lessen "skin" effect (or tendency of electricity to travel more on the surface than through the body of wire conductors) in conveying heavy alternating currents of high frequency; a type of cable also required in many long-distance transmission lines to obtain increased diameter without added weight and to obviate corona effects caused by high potentials.

**High Tension Cable.** A conductor for transmitting currents of extra high pressure for long distances, made in many types, one tested at 150,000 volts having a core of nineteen 3.3 mm. stranded wires, tubed in lead, and plied and insulated thus: (1) pure rubber, (2) and (3) light and heavy compounded vulcanized rubber, (4) impregnated paper, (5) hemp coating, (6) lead sheeting, overall diameter, 26-16 in. See Feeder Cable.

**Ozocerite-Asbestos Cable.** A high-tension cable (and wire) with tubed insulation of a mineral wax-asbestos or mica patented compound designed to replace lead-covered cable, and said to have high dielectric strength, low electrostatic capacity, and to be tough, acid, flame, and waterproof.

**Ozone-Proof Cable.** A high-tension aerial cable for use on a shore line or in other places where ozone is likely to form on the surface and break down rubber insulation, and which deterioration is checked by coating the rubber with a layer of varnished cambric tape, over which is put one or more braids saturated with weatherproof compound. See Ozone.

**Paper Cable.** A high-tension conductor, single, duplex, or multiplex, the cores of which have many coils of manila rope or wood pulp paper, helically applied, and usually oil-impregnated, as the immediate insulation, with lead sheathing to retain the oil and for mechanical protection. See Paper Insulated Wire, Paper Wrap.

**Power Cable.** A large-capacity conductor for high-tension currents, as on light and power lines, and on which the insulation must afford maximum resistance to a disruptive discharge; single, duplex, or multiplex conductors, with solid or stranded cores; a much used type having insulation of vulcanized rubber and rubberized tape, and lead-encased; space between three or more conductors filled with jute; overall covering of rubberized tape, and lead sheathing. See Feeder Cable, High Tension Cable.

**Rubber Cable, 3-Core.** A triplex conductor high-tension cable with stranded cores insulated in high quality rubber and embedded in very flexible compounded rubber to give a circular cross section, served with jute, with an inner armor of small galvanized iron wires, a second serving of jute, an outer armor of heavy wire, and an asphalted jute covering.

Copyrighted by Henry C. Pearson. Continued from *The India Rubber World*, July 1, 1926, pp. 189-190. See also *Crude Rubber and Gutta Percha Definitions*, *The India Rubber World*, 1921; *Pneumatic Tire Definitions*, *The India Rubber World*, 1921 and 1922.

**Standard Feeder Cable.** A feeder cable designed to deliver current at standard voltages,—110 to 220 volts pressure. See Feeder Cable.

**Station Cable.** A single conductor cable for connecting dynamos or other machinery in power stations and substations; core sizes, 2,000,000 to 250,000 c.m., varnished cambric insulation, overlaid with saturated braid, and an overall of braid impregnated with flame-proof paint. Asbestos is sometimes used instead of the varnished cambric.

**Steel Taped Cable.** (1) A high voltage conductor, commonly in single, duplex, or triplex type, for underground use or in submarine service with low tensile strain; cores solid or stranded; insulation, vulcanized rubber; tape or braid on each conductor, lead sheath, tarred jute padding between lead and a first layer of steel tape applied spirally, with a second layer in the same direction but covering the space between the convolutions of the first steel taping; and an overall of tarred jute to resist moisture and save cable from mechanical injury; designed to dispense with conduits. (2) A type of high voltage cable with nine insulating and protective covers designed to dispense with subsurface ducts or conduits required for ordinary lead-covered cable; usually laid directly in the earth without added protection, as for street and park lighting; made in three forms, single conductor-stranded core, 2-conductor and 3-conductor, solid cores; core sizes 0000 to No. 14 A. W. G.; cores are insulated with vulcanized rubber coated with rubber-filled tape, laid parallel in the duplex type, and wormed or twisted about one another in the 3-conductor type; interstices filled with jute, covered with rubber tape, sheathed with lead, served with jute, armored with two spiral layers of steel tape, and an overall covering of asphalted woven jute. See Underground Lighting Cable.

**Submarine High-Tension Cable.** A deep-water cable for transmitting high voltage currents, usually having three stranded, tinned conductors insulated with 30 per cent Hevea rubber compound, wrapped with several layers of varnished cambric tape, stranded with impregnated jute fillers to give a tubular form, and over which is a belt of varnished cambric tape, a lead sheath, a layer of jute, heavy galvanized steel wire armor with voids closed with an asphalt compound, and a jute overall covering.

**Three-Conductor Power Cable.** A triplex cabled conductor much used for high potential light and power circuits, a type designed for 10,000 volt circuits being made up thus: Conductors, three strands, each of .082-inch diameter and each consisting of 37 copper wires; insulation, many windings of oil-saturated paper or varnished cambric on each conductor, making each .17 inch in diameter; jute filling; a .17 inch paper jacket, a .13 inch lead sheath; outside diameter, 2.56 inches.

**Radio Cable.** A term applied to many types of cords and wires used chiefly in receiving wireless telegraph and telephone messages. See group Radio.

**Rope-Lay Cable.** A single conductor cable having one or more layers of helically-laid groups or strands of wires coiled about a core wire.

**Rubber-Covered Cable.** A flexible single conductor for telephone switchboard, dynamo, and motor connections, sizes of cores Nos. 19 to 25 A. W. G., made with tinned straightway wire strands numbering from 166 to 21; insulation, vulcanized rubber, and single or double braid.

**Rubber Insulated Cables.** A variety of cables used for government and railway signal service, underground, submarine and aerial, in which the copper conducting wires are coated with high-grade rubber insulating compounds, varying with the use to be made of the cable, stranded into a core, the interstices between the conductors being rounded

out with jute fillers, the whole covered with rubberized tape over which is placed a lead sheath; or, as may be required, an additional belt of rubber insulation over which is put tape, lead, armor, or other protection. Finishes include: taped and leaded; taped and braided, with reverse jute layers; taped, leaded, and braided, weatherproof, soapstone, or flameproof finish; taped, leaded and juted; taped, leaded juted, and armored; taped, leaded, juted, armored and juted; taped, juted and armored; taped, juted, armored and juted.

**Rubber-Sheathed Cable.** A duplex high-tension, highly flexible cable, each core of which is a fine strand insulated one pure and one compounded rubber (differing in color), the cores laid in parallel or wormed together with jute fillers, and sheathed in very resilient rubber compound. See All-Rubber Portable Cord, Cab Tire Cable.

**Screened Cable.** A lead sheathed cable designed especially to offset or avoid the effects of static induction between conductors, the "screening" being effected by having the rubber insulation of each conductor covered with a thin copper ribbon laid on spirally and overlapping, and which ribbon is grounded by connecting it with the lead sheath.

**Search Light Control Cable.** A large armored rubber covered two-conductor cable ranging up to No. 4 A. W. G., rubber insulated, twisted and jute filled, coated with braid saturated with weatherproof compound, and covered with a galvanized steel or phosphor-bronze braid.

**Sector Cable.** A multiple (usually three) conductor cable in which the cross section shows each conductor shaped as a sector, a semicircle, an ellipse, or a near triangle; insulation of cores usually of paper, filling of jute, overall insulation of rubber filled tape, and sheath of lead; preferred for some uses to round conductor cables as having greater carrying capacity and other technical advantages. See Paper Cable, Paper Insulation.

**Shallow Water Cable.** See Dredger Cable.

**Sheath.** The metallic or other outermost covering of a cable, designed to protect it from chafing or other mechanical damage; usually a lead casing for an aerial or underground cable, and steel (galvanized iron) wires grouped spirally over a padding of tarred jute or hemp on an ocean or submarine cable. See Aerial Cable, Underground Cable, Submarine Cable.

**Signal Cable.** A group of solid core (usually as No. 14 A. W. G.) signal wires used in railroad service. One type has 25 of such wires assembled thus: A twisted pair of separately taped wires are wrapped in tape, eight more taped wires are wormed about the pair and encased in tape, fifteen taped wires are wormed reversely about the inner group, and then covered with tape, jute, tape, and weatherproofed braid. In a 30-wire cable the jute is omitted and a lead sheath used instead of braid.

**Single Wire Cable.** A cable having but one conductor, relatively large, and substantially insulated.

**Soft Core Cable.** A single conductor cable, the core of which consists of a single copper wire, annealed or soft drawn to obtain added conductivity, and about which are laid up hard drawn copper wires.

**Solid Bitumen Mine Cable.** A multicore cable designed for mines, collieries, etc., each strand of the conductors being insulated with bitumen, each core having a shaped padding of bitumen, and bitumen being used instead of fibrous padding between the cores and for an overall cover; and the whole having a double armor of helically wound galvanized iron wire.

**Spiral Wrapped Cable Armor.** A steel cable armor having a D-shaped cross section applied in open, spiral wrap over flexible, weatherproof, braided, portable cables to protect them from chafing and like damage. (To be continued)

## Rubber Mixing—I

### Steps in the Mixing Process—Construction of Standard Two-Roll Mixing Mill—Construction and Advantages of Internal Mixers—Plasticating Rubber

#### The Mixing Process

THE ordinary batch of gum and earthy matters as delivered in the mill room ready for mixing comprises various proportions of crude rubber, reclaimed rubber, mineral rubber, or liquid softeners, sulphur, or other vulcanizing agents, pigments and earthy fillers. The mill room work is to blend these ingredients into a homogeneous product with the least expenditure of time and power. The process is entirely mechanical and comprises three stages: First, softening or plasticating the gum to enable it to easily absorb the earthy matters; Second, grinding into the softened rubber base the mixed powders; Third, batching the compounded stock into slabs for cooling and storage. The mill room equipment for accomplishing these steps comprises a series of ordinary roller grinding mills, frequently supplemented by some form of internal mixer.

#### Standard Rubber Mixing Mill

The modern mixing mill has reached its present size and design by development from the original small, slow belt driven machine of the early years of the industry. It is now a standardized heavy, motor-driven machine. The mixing mills of the various makers are essentially the same in general design. Standard mills have 60 and 84-inch rolls and conform to the following general description.

The roll housings are of semi-steel with top caps, for convenience in removing the rolls when necessary, and rest upon heavy cast-iron bed plates firmly secured to the foundation by anchor bolts.

The rolls are of cast iron, usually 22 and 26 inches in diameter, or both may be 24 inches diameter. Both rolls are cored and

at both ends of the mill rolls prevent the rubber and compounding ingredients from escaping to the mill pan below without passing between the rolls.

All rubber mills are provided with one or more safety devices to safeguard the operator. The simplest of these are the sheet



Banbury Inclosed Mixer With Feed Hopper

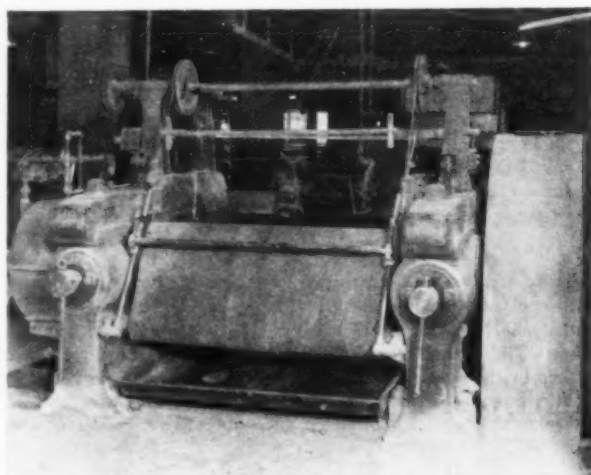
metal gear covers. Others are mechanisms mechanically or electrically operated, designed to stop the mill more or less automatically in case the operator should in any way become involved in an accident while mixing.

#### Mixing Apron

The mixing of batches can be expedited and the manual labor greatly lessened if the mill is equipped with a mixing apron. This is a 3-ply endless belt conveyer with friction surface and extending full width of the mill rolls. It is so arranged and supported on rollers that it traverses from the front to the rear below the rolls where it receives the powdered material that drops between the rolls, conveys it forward around the face of the front roll and discharges it into the batch being milled.

The saving of labor by a mixing apron is a great advantage. By the use of an apron on a 60-inch mill one operator can mix a 200-pound batch without difficulty. Without an apron it would require two mill operators to do the work.

The work done by a rubber mill depends on the surface speed of the back or driving roll and the ratio of the speeds of the two rolls—otherwise called their friction ratio. Excessive heating of the stock, to the point of injury by scorching or partial vulcanization, results from too high speed and friction. Fifteen or 20 years ago the common practice of American rubber mill builders was to gear mill rolls at about  $1\frac{1}{2}$  to 1, and this ratio is still used for general work. Large mills for mixing tire tread stocks are now geared  $1\frac{1}{4}$  to 1. The surface speed of the front roll



Farrel Mixing Apron in Working Position

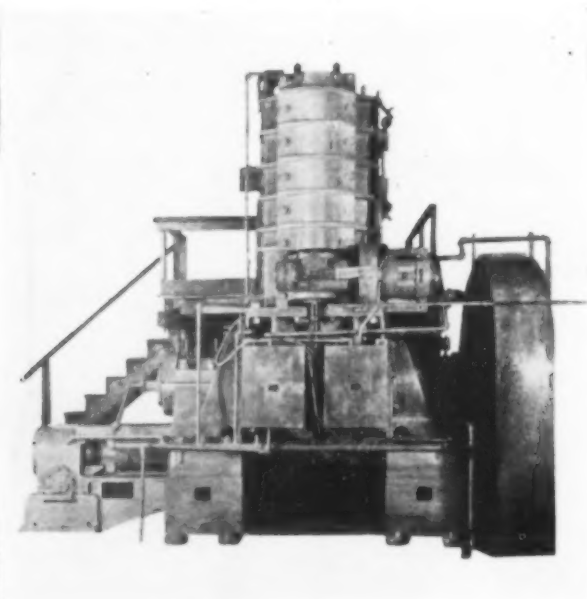
fitted with stuffing boxes and in mills of large size the journal boxes are water cooled.

The rolls are connected by cast gears. The mill is driven by gear and pinion connection to the rear roll. Roll position adjustment is effected by screws on the front of the mill frame. Guides

should not exceed that at which the operator can conveniently and safely conduct the mixing and remove the stock from the mill by hand cutting. In practice the surface speed of the front roll is from 1,000 to 1,100 inches per minute.

### Inclosed Mixers

Inclosed or internal rubber mixers were developed in response to the need of increased production and to suppress the dust from carbon black as a compounding ingredient. Inclosed mixers



Improved Farrel Inclosed Mixer

as originally designed were used chiefly for mixing rubber stocks low in rubber content because such stocks were less liable to injury by the temperatures generated in the mixing operation. The demands of the tire industry and the nature of the rubber stocks employed has resulted in the development of the mixing mechanism and extension of the water-cooling features of internal mixers. As now perfected these machines are adapted for mixing all types and qualities of stocks. Their effect in softening the gum is due more to mechanical working than to high temperature hence the reduced liability of scorching stocks by the use of improved internal mixers. In actual service these mixers have demonstrated marked advantages over roller mills and are classed among the advanced facilities that characterize American rubber manufacturing practice. The principal internal mixers are the Banbury and the Farrel.

### The Banbury Mixer

The mixing mechanism of the Banbury consists of two rotors or blades turning in opposite directions at different speeds within the mixing chamber. The materials are fed into the machine through a hopper at one side and near the top of the mixing chamber. During the agitation of mixing they are kept within the mixing zone by heavy pressure exerted upon them by an air-controlled ram or a floating weight. The mixed batches are expelled through a hydraulically operated gate in the bottom of the machine. The chamber walls, rotors, ram and gate are water-cooled.

### The Farrel Mixer

The Farrel inclosed mixer differs in its mechanism and design from the Banbury. Within its mixing chamber is contained a

single rotor carrying two opposing spirally shaped blades. These circulate the gum and compounding powders within the chamber from its ends to the center and back again. The mixed stock is discharged through a movable section in the bottom of the chamber and is received on an endless apron which conveys it aside for removal to the batching mill. Both Banbury and Farrel mills are motor driven and are built of various mixing capacities up to batches of 750 to 800 pounds of tire tread stock. In the smaller Banbury mixer the fast rotor speed is 40 r. p. m. and the slow rotor 35 r. p. m. In the medium size the rotor speeds are 24 and 20 r. p. m. and in the largest 14.5 and 12.5 r. p. m.

### Economy of Internal Mixers

Internal mixers require rapid circulation of lower temperature cooling water than is necessary in roll-mill mixing and the latter gives more mechanical working effect and greater cooling area in proportion to batch capacity. These points are more than compensated by special advantages afforded by the internal mixers. The advantages of internal mixers are: in the larger batches they blend the rubber and other ingredients better, yielding stocks of more uniform quality. They are easy and safe of operation; occupy less floor space for the same output at large savings in cost per pound of stock mixed. The disadvantages are: certain kinds of stocks are less plastic when mixed on internal mixers, also many cannot be mixed completely as in the case of mill mixing and the sulphur must be incorporated subsequently on ordinary mills. Stocks delivered from an internal mixer always require batching on a roll mill.

Practical mill runs comparing the relative costs of mixing various types of rubber stock by internal mixers and by standard 84-inch roll mills show large percentages of savings in favor of internal mixers. The amounts vary with the nature of the mixings and are greater as the capacity of the internal mixer increases. On heel, hose, belting and matting stocks internal mixing shows savings of 43 to 60 per cent; tire friction and coating stocks 24 to 44½ per cent; black pneumatic tire tread 63½ to 80 per cent. When the comparisons are made with the 60-inch mill the savings in labor and power costs are even greater.

### Breaking Down Rubber

The step preliminary to making a rubber mixing is known as "breaking down." It consists in milling the gum on a roll mill until the mechanical work and incidental heat breaks down the resistance of the rubber and reduces it to a smooth plastic condition and thoroughly averages its quality.

The operation of breaking down a batch of rubber may require from 30 minutes to 2 hours of mill grinding according to the hardness of the gum, the speed of the mill and the softness required. If the amount of breaking down is sufficient in amount the work is assigned as a steady job to a number of mills.

### Fine Grinding

There are two methods of plasticating rubber by milling. The first one is known as fine grinding. This is done on rolls adjusted close together so that the rubber is sheeted thin between them. The dry rubber is allowed to run through the rolls and collect in the mill pan below them. This operation is repeated until the gum becomes sufficiently softened. This condition is indicated by its sheeting smooth and soft without breaks on the front roll.

### Bank Grinding

The second method of plasticating rubber is known as bank grinding, because the mill rolls are adjusted so as to maintain a surplus or bank of rubber between the rolls while the remainder of the gum batch sheets as a layer about ¼-inch thick around the front roll. The difference in surface speed of the rolls causes grinding or stretching in the mass of the rubber and breaks down its firm character as it revolves in the "bank" or surplus between

the rolls reducing it finally to a soft mass. The operator hastens this result by repeatedly cutting away some of the gum from the front roll, thus allowing the bank to run through and a new one to form as he lets the cut portion run back into the mill. During the breaking down operation the heating of the gum caused by its mastication is kept within bounds by circulation of cool water through the mill rolls. Bank grinding is more generally practiced than fine grinding because it averages the gum well and produces uniformity of texture without excessive injury to its fiber.

In practice dependence is placed upon the skill and judgment of the operator to control the degree of breaking down to be done and recognition of when the process is complete for any given grade or purpose. The mill man's method of testing the end point is literally by rule of thumb. That is to say in conjunction with observing the smoothness of the gum on the front roll and in the revolving bank he notes the ease with which the gum gives way to the pressure he exerts by his thumb. Well broken down rubber is without the snappy retractile action when the stress on the gum layer around the front roll is relieved by a knife cut.

(To be continued)

### TIRE MANUFACTURERS CUT PRICES

A second reduction this year in the prices of tires, as instituted by the Goodyear organization, has had the effect of putting dealers' prices of tires and tubes back to levels which existed prior to the three price increases of last summer and fall. Following the Goodyear price cut of July 6, which became effective immediately, and which ranged from 10 to 20 per cent on tubes and 10 per cent on casings, several other companies at once followed suit. The Kelly-Springfield organization announced reductions ranging from 2 to 20 per cent, the Dunlop decrease was from 10 to 25 per cent, while the Goodrich price cuts represented a falling-off of from 10 to 22 per cent. Other companies announcing that somewhat similar changes are contemplated included the Fisk, United States Rubber, Firestone, General, and Miller organizations.

L. C. Rockhill, sales manager of the Goodyear company, in a statement concerning the recent price reductions said:

"While production costs are still based on rubber bought at levels higher than the present market, these reductions are being made earlier than might be expected in order that the public may benefit by lower prices at the height of the buying season. The present decreases in our prices merely anticipate reductions that would normally be expected later in the year."

### COMPARATIVE TIRE EXPORTS OF LEADING COUNTRIES

Statistics as to tire exports from eight producing countries show, according to the Department of Commerce, a steady increase in recent years, such combined exports during 1923 being 22.4 per cent greater than those of 1922, the 1924 figures being 9.2 per cent higher than that of the year previous, while for 1925 the record shows an advance of 30.6 per cent over 1924.

Individual countries participating in this gain are: France, exporting in 1925 1,873,000 automobile casings, as against 1,677,000 in 1924, 1,510,000 in 1923, and 1,210,000 in 1922; United States, 1,770,000 in 1925, 1,389,000 in 1924, 1,363,000 in 1923, and 1,326,000 in 1922; and the United Kingdom, 872,000 in 1925, 550,000 in 1924, 397,000 in 1923, and 271,000 in 1922. Other countries also representing continued advances are: Canada, 848,000 in 1925, 500,000 in 1924, 480,000 in 1923, and 290,000 in 1922; and Italy, 801,000 in 1925, 667,000 in 1924, 490,000 in 1923, and 330,000 in 1922. Belgium's tire exports during 1925 at 144,000 are more than double the amount shipped in 1922, Japan's total also rising from 150,000 in 1922 to 217,000 for 1925. Germany alone of the leading countries shows a decline, exports for 1922 being 192,000 as against 175,000 for 1925.

### Rubber Heel Consumption

The rubber heel has long been established in favor with the public because of its characteristic resilience and superior wear resisting quality. Its manufacture has become a specialty of considerable magnitude as indicated by the following comparison of shipments of leather boots and shoes with rubber heels. The analysis of heel shipments to shoe manufacturers shows that rubber heels are called for on over one half the output of leather footwear and that this relation was maintained during the first quarter of the present year. The statistics below indicate the magnitude of the leather footwear production and its consumption of rubber heels as original equipment:

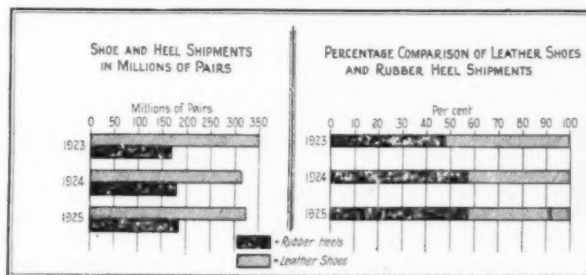
Year	Leather, Boot and Shoe Production Pairs	Rubber Heel Shipments to Shoe Manufacturers Pairs	Percentage Relationship
1923	351,114,273	169,521,053	48.2
1924	313,230,157	178,498,550	56.9
1925	323,553,055	184,533,219	57.0
Jan.	23,873,660	15,014,924	62.8
Feb.	25,515,800	12,492,360	48.9
Mar.	29,839,528	13,014,672	43.6

The distribution of the rubber heel shipments for the past three years between leather shoe manufacturers, the shoe repair trade and the export trade is shown in the following table:

Year	DISTRIBUTION OF RUBBER HEEL SHIPMENTS					
	Manufacturers Pairs	Per Cent	Repair Trade Pairs	Per Cent	Export Pairs	Per Cent
1923	169,521,053	70.3	71,528,078	29.7	1,000,000	1.0
1924	178,498,550	68.6	81,436,578	31.4	1,000,000	1.0
1925	184,533,219	63.4	98,173,105	33.7	8,217,727	2.9

1. No figures available.

A beginning only was made last year in the export trade which should develop to generous proportions especially for foreign repair trade due to the fact that rubber heel production in the United



### Heel Shipments to Shoe Manufacturers Compared With Leather Shoe Production

States is on the highest plane of efficiency as regards special machine equipment facilities and serviceability of product.

Monthly comparisons of the shipments of rubber heels to leather shoe manufacturers for the first four months of 1925 and 1926 are shown in the annexed table:

COMPARISON OF 1925 AND 1926 SHIPMENTS OF RUBBER HEELS FOR FIRST FOUR MONTHS			
Month	1925 Pairs	1926 Pairs	Percentage Gain or Loss
Jan.	20,515,822	22,422,362	Increased 9.2
Feb.	18,512,720	17,322,412	Decreased 6.4
Mar.	20,293,528	19,810,545	Decreased 2.3
Apr.	20,839,899	14,496,295	Decreased 30.4
Total	80,161,969	74,051,614	Decreased 7.6

It is estimated that leather shoe manufacturers make one-third of the heels used on their goods. The above figures from the Rubber Association of America cover only heels produced by rubber companies. Therefore, the consumption of heels by leather shoe manufacturers would have been approximately 277,000,000 pairs in 1925.

Sources of figures: rubber heel shipment figures from Rubber Association monthly reports representing 70 per cent of the industry and are raised to 100 per cent; leather boot and shoe production figures from United States Department of Commerce monthly reports.

## Rubber Man Power

This is a machinery age. The industrial supremacy of the United States owes its rise to the development of automatic machinery. The values offered such industries as the automotive and textile have been made possible by it. The trend of popular magazine business articles is to chronicle these achievements, and they have not been overemphasized.

Rubber manufacturing has also made great strides in the last few years along the lines of continuous processing and cutting corners with new machines. A recent visitor to Akron, who wrote of what he saw and heard in the rubber center of America, characterized the outstanding feat of the industry there as an increase of kilowatt hours per man from less than one in 1922 to more than three in 1926.

Did you ever watch a group of visitors being guided through a rubber factory? If you have, you will recall how they invariably stop before some piece of machinery, fascinated by the work it performs. It may be a calender frictioning a piece of fabric.

Yet with all the advance in machinery and the growth of power, manufacturing skill in rubber is still vested pretty largely in the workman. The man in the overalls and jumper who runs the calender contributes more to the success of the operation than the machine. He knows when his stock is milled properly, the touch of his thumb on the roll tells him whether it is too hot or too cold, the quality of the work is largely in his hands.

Just after the war, a small tire plant called a superintendent and chemist from the west to modernize the plant and standardize the product. The man was qualified to be called an expert owing to his long experience in the field. Organic accelerators were not in use at the plant, and one of the first things he was called on to do was to furnish a new set of compounds. When the first batch of friction went to the calender to be run on builder fabric, the workmen had trouble in handling it, scorched it on the mill, and the operation was not a success.

Right away, the superintendent sent to Akron for a calender man. When asked the reason he replied, "All I have to do with this man is to give him his ticket each morning of what I want run. He'll do the rest." Not the materials, not the machine, but the man!

Today Akron uses more than three kilowatt hours per man. But in the mixing, milling, and calender departments of Goodyear, Goodrich, Firestone, and the rest, the calender operators are exercising their skill day in and day out to turn out the product and maintain the quality.

So do not lose sight of the fact that in this machinery age in rubber, the human element is still the controlling factor.

## Rubber Loud Speaker Horn

Rubber is being used in the development of radio, both in the hard and soft rubber form. One of the latest inventions is a bell mouthed loud speaker horn made of hard rubber and attached to a metal neck by a very ingenious method.

Under this patent, the bell mouth horn is formed of rubber which is soft or of semi-soft nature when hot, becoming hard and rigid when cool. This suggests a semi-cure by molding or possibly in an open heat by wrapping on a form, or buried in talc as hose products are made. With this intricate compounding and vulcanizing quality obtained, the bell mouth is taken from the vulcanizer, and the small end stretched over a metal goose neck while soft, the subsequent cooling action causing the rubber to shrink and harden, thus becoming firmly fastened to the metal.

This new use of rubber to be carried out, requires engineering as well as chemical skill, the form to shape the rubber to the bell horn pattern, and a compound and cure which is so nicely timed that its vulcanization is just completed as the horn is removed from the heater and applied to the metal head.

New adaptations of rubber to radio like these, remind the rub-

ber manufacturer who finds his markets shifting and the demand for his products falling off, that the possession of a modern plant for rubber manufacturing is an asset always capable of paying dividends if the output is turned into proper channels. He must visualize a few of the myriad possibilities of new and useful rubber products to keep the gears meshing and the mills rolling twenty-four hours of every day.

## Rubber in Railway Draft Gear

In the newest application of rubber to railway equipment there is a reminder of its ancient use as car springs for absorbing the shocks of railway travel. The former general use of rubber for this purpose is indicated by the fact that one rubber manufacturing company was called the Car Spring Company.

It seems that rubber springs are now bidding for a place in modern car equipment. This time in the draft-gear of cars where the jerk or impact of starting and stopping a heavy train is most severe upon rolling stock, freight and passengers.

The extent of the field for this application in the passenger car field is very large. In 1925 there were in service in the United States, 65,332 locomotives; 54,719 passenger cars; 7,750 Pullman cars, and 2,347,588 freight cars. This rolling stock utilizes nearly 5,000,000 draft gears. The element of personal comfort is very important as influencing the use of the improved draft gear on passenger car equipment. It is present also in the case of the movement of live freight where comfort of the animals means less loss by death and injury and less damage to breakable goods in transport.

In the new design of draft gear three pairs of heavy rubber buffers or springs are interposed between the draw bar and the coupling. The springs of each pair are arranged tandem on a rod and the several pairs arranged side by side supported in a frame with a yoke connection at each end. When the gear is under draft the pull exerted upon the coupling head and draw bar is transmitted through the intervening frame. The rubber springs, under the compression exerted upon them, cushion and absorb the shocks and stresses and the draft is applied gradually to the vehicle.

Millions of commuters and the ever increasing army of long distance travelers will hail the time when rubber is generally adopted to relieve the discomfort of starting and stopping in railway transportation.

## FACILITATING TIRE INSPECTION

The inspection of the inside of a tire casing, whether it be a new one being checked before it leaves the factory, or a tire returned for adjustment or repair, is an awkward and, at best, irksome task. Both manufacturers and service station proprietors therefore will be interested in the tire inspection machine built to do this job.

This machine which operates by foot treadle allows such a thorough inspection of the tire that every break or bruise or cut is brought to view. The fingers of the machine grasp the edges of the tire firmly, spreading it open. These fingers are so located that the tire is easily accessible for repairs to be made while in the machine, which can also be used for inserting an inner tube and flap.

Not the least importance of its utility is the fact that it enables the motorist seeking adjustment to see the exact condition of the casing.—The Ramsdell Manufacturing Co., 6536 Carnegie avenue, Cleveland, Ohio.



Ramsdell Tire Inspector

# The Bedaux System in Rubber Factories

## I. Outline of System

**This System Deals Only with Measurement of Human Power, Without Considering Method or Equipment, Expressing in One Common Unit the Work Done, and Affording Comparison of Productive and Waste Effort**

THE Bedaux principle of human power measurement is of interest to all rubber executives as it is now in successful operation in several of the largest rubber plants in this country. To the rank and file of production men whose experience covers only the universally used piece work system as developed from the late F. W. Taylor's system, Bedaux's method exists only as a theory, and little is known about its practical application. To define Bedaux's theory and system as clearly as possible, then to show how it has been applied in the rubber industry, showing its advantages and disadvantages as compared with straight piece work in the various fields, tires, mechanicals, and footwear, is the purpose of this, and succeeding articles.

The system is characterized by the fact that it deals only with the measurement of human power, not entering into the field of method and equipment. It expresses in one common unit the work done by every human being, whether laborer or supervisor, in relation to the work that should be done, and permits comparison of productive effort against waste effort. Although based on time study, the same as Taylor's system, it differs in the method in that the question of strain or fatigue is considered in rating the job according to a set of laws formulated by Charles E. Bedaux after several years of experimentation. They are: (1) For muscular effort of a given power the ratio of strain is directly proportional to the rapidity of motion and completion of the cycle. (2) Rapidity of motion is inversely proportional to weight handled, pressure applied, and length of cycle. (3) For a muscular effort of a given power the duration of rest and work periods is inversely proportional to the rapidity of motion.

For example, to illustrate the law, wrapping a box of safety matches in light-weight paper would require only slight muscular effort, and the motion and completion of the cycle would be of great rapidity. The ratio of strain would be very great. Wrapping a two-foot cube box weighing forty pounds in heavy tarred paper would require great muscular effort, and the motion and the completion of the cycle would be of low rapidity. The strain would be relatively slight. The corollary may be applied to the same example.

The first law and its corollary were later supplemented by a second law: For a muscular effort of a given power the duration of work and rest periods is inversely proportional to the rapidity of the motion. Reverting to the example of wrapping the two boxes, the second law means that since the rapidity of motion in wrapping the matches is great, the work and rest periods should be short, while they should be long for the operation of wrapping the large, heavy box.

The application of these laws to time study was, of course, the embodiment of the consideration of strain. The results seemed to the originator of the laws to reduce to such an extent the inequalities in values that he began to standardize his data by building up a curve showing the rest or relaxation times that should be considered as necessary to offset working times, the whole based on the length of the cycle. This curve, begun in 1911 and finished in 1916, is the key part of the present system. It is called the relaxation curve, and its limits for relaxation time in proportion to working time are 15 per cent and 210 per cent.

Under the Bedaux system, each job is rated by the fatigue curve according to the length of time it takes to complete one operation cycle. For instance, supposing the time for building the carcass of

a four-ply balloon tire on a standard building machine, with correct fatigue allowance, is 15 minutes. The standard or B-value for building tires then, would be 15, which expresses in terms of minutes or fractions of minutes, the time an average or normal operator should require to complete one unit. The normal man would, therefore, produce in an 8-hour day 32 tires, working at a 60 point hour rate: 32 tires multiplied by 15 (standard B) equals 480 points, divided by 8 hours, equals 60, the point hour, or rate of efficiency.

How is this translated into terms of pay? In this way. The man is paid by the hour, at the prevailing wage for his skill—let us suppose at a 75 cent rate for tire builders. For working at normal or 60 point hour rate he is paid his normal wages, 8 hours at \$0.75, or \$6 a day, for producing 32 tires. But this particular tire builder is a fast man, and builds a tire every 12 minutes or 5 per hour, and 40 per day. His production of 40 is multiplied by the standard 15-600 points. In other words, he did 10 hours work in 8, or worked at 75 point hour, 600 divided by 8. Deducting the standard points 8 hours multiplied by 60-480, from the actual (600), leaves 120 premium points on which he is paid a bonus under the Bedaux system as follows:

8 hours @ .75 =	\$6.00
2 hours @ .75 = \$1.50, of which he is allowed 80 per cent, the balance going to supervision and clerical, making the premium	1.20
Total pay for 8 hours.....	\$7.20

In other words, he earns his \$6 a day and a premium of \$1.20 for work better than standard. This premium is paid in a separate envelope.

On the face of it, it may seem unfair not to give the operator the entire reward for his extra labor. But, under the Bedaux system, recognition is made of other factors contributing to his extra production. In order for him to build 40 tires instead of 32, his cord pockets must be made correctly, be arranged in proper sequence, and be there on time. This is accomplished by good supervision which should also be rewarded. To maintain the necessary records for the system, also requires clerical help for which provision must be made.

Furthermore the Bedaux system is fairer to the worker than piece work in that it provides that all idle and breakdown time shall be paid for. Suppose the tire builder has to wait for stock. The lost time is entered on his time sheet, and he is paid for it at his regular hourly rate. This time is not charged against his production. For example, on the same operation of building tires, the time sheet might read as follows:

Productive	Idle Time	Breakdown
8-8.30	8.30-9	.....
9-10.30	.....	10.30-11
11-12	.....	.....
1-5	.....	.....
Total hours 7	.5	.5
Idle and breakdown time is paid for and is not charged against his production.		
Production, 37 tires x 15 (standard) =	555 productive points	
Non-productive (idle, etc.) 60 points =	60 productive points	
Total points.....	615	
Standard 8 hours x 60.....	= 480	
Premium points.....	135	
Eight hours @ 75 cents.....	= \$6.00	
Premium .....	1.35	
Total pay.....	\$7.35	

This may seem strange in that the worker receives more pay for producing 37 tires than he did in the first instance for making 40. But, in the second instance, if there had been no idle time due to waiting for stock, and if the machine had not broken down, he would have produced 42 tires in 8 hours. In other words, the supervision and maintenance is charged with the responsibility for their shortcomings, by a higher cost per unit showing on their department analysis sheet. Thus the worker is assured of full wages for his time, with the opportunity to earn extra or premium wages by working faster than normal. The worry of losing wages due to causes beyond his control, which constantly bothers the piece worker, is thus removed.

Posting sheets, showing the hours worked, the point hour attained, and the daily premium wage are posted so that the operator can gage his performance, and know just what his earnings are. In addition, each department head receives a consolidated sheet or analysis form, showing the performance of each operator and the average point hour of the department. Lost time due to breakdowns and various causes is shown separately, which tends to keep these leaks constantly before the management and enforces correction and improvement.

The measurement of supervision for a department is made as follows: The standard productive cost per point (minute or fraction of minute it takes to produce one unit with proper allowance for fatigue), the standard non-productive cost per point (these are helpers and general workers not on premium, but for whom a standard of work is set by observation), and the actual non-productive cost per point are determined. The two productive costs (standard and actual) and the two non-productive costs are added in each case to give the total standard cost per point, and the total actual cost per point for the department.

The department point hour, obtained by subtracting from the operator point hour the units allowed for causes beyond the control of the operator, permits a comparison between actual accomplishment and possible accomplishment and gives the true measure of supervision when cost is taken into consideration. The measurement of supervision expressed in percentage, or as the ratio of standard to actual, is obtained by multiplying the standard cost per point by the department point hour, and dividing the product by the actual point cost.

It becomes evident that if a supervisor allows his department point hour to decrease through losses of possible production, his actual point cost increases beyond standard, automatically reducing the supervision point hour below that of the department, thus penalizing supervision by obliging it to accept less than the possible financial returns.

Inspection is another form of endeavor to be cared for. It is divided into preventive and positive. Preventive, or floor inspection, is rewarded on the relation of department point hour to percentage of scrap, in a ratio making it more profitable to the inspector to have a department point hour of 60 with no scrap, than a higher point hour with a scrap percentage above zero.

A recapitulation of the salient features of the Bedaux principle and system is afforded by these statements:

The principle aims to establish a standard of measurement of labor.

The essential part of the system is a relaxation curve, its values determined by trial. It is based on length of cycle of operation only but is supplemented by tables of added allowances controlled by sequence of motion and position of the body.

The unit of measurement of accomplishment, called a B, is one minute, divided into time for work and time for rest.

All computations are made in Bs. The actual money paid to a worker is determined by multiplying his hourly rate by the number of hours worked. It is given to him in an envelope. In another envelope he is given an additional amount determined by multiplying all Bs or points over standard by their money values.

There are no piece prices.

Supervision and indirect labor are rewarded for extra effort reflected in production.

Method and equipment do not enter into the system. (Improvements in method and equipment call for setting of revised B standards).

There is one unit to use in all records of production of individual and department. Two forms are necessary.

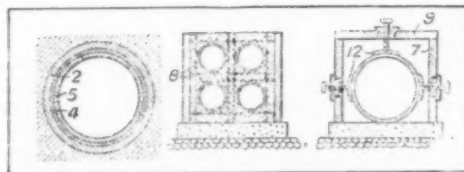
It is hoped that this brief survey will give a basic idea of what the Bedaux system is, so that in future articles dealing with actual comparisons of results obtained under piece work and Bedaux in the various branches of the rubber industry, those interested will have sufficient background to follow the discussions.

## Rubber Tubes for Making Concrete Pipes

A short time ago, English papers gave publicity to a new method of making concrete pipes in which rubber tubes were used. The process, said to be of Japanese origin, was described as follows:

Referring to the illustrations the flexible core consists of two parts, one an elastic outer tube (2) smaller in diameter than the bore to be formed, and the other, a separate, flexible but inextensible double-layered tube (4 & 5) which, when inflated, is slightly larger in diameter than the exterior portion. The outer body may be of rubber and the inner of rubberized canvas, leather or any other similar material and strips of bamboo or the like may be placed between the interior and exterior layers of the inner part of the core when the culvert is straight.

When a casting is to be made the inner portion is inflated and being then larger than the outer rubber tube, stretches this to the



Making Conduits in Situ with Rubber Tubes

desired size. After the concrete has been shoveled into the trench the inner tube is deflated and the elastic outer tube contracts from the concrete to its original size, when it is easily removed.

The core may be supported between crossed wires (8) which form the reinforcement for the culvert or between adjustable clamping members (12) in frames (7 & 9) which are removed as the casting proceeds.

According to the newspaper accounts the use of a flexible sack-like core in molding concrete conduits is not new. However, formerly the core was not elastic and therefore difficult to remove, particularly when the pipes were bent or curved. The improvement consists in the use of an extensible rubber cover over the inextensible canvas or leather core. The latter portion is necessary to give strength and rigidity to the core which may be reinforced by bamboo strips and supported by wires or frames.

This process suggests the use of inflatable tubes for making conduits under plaster for the installation of electric wires in new buildings. The usual method is to lay a pipe net under the plaster, then to plaster this and when the plastering is finished to draw the requisite wires through the pipe net. It is obvious that a saving in material and labor could be effected by the use of inflatable rubber cores.

DURING THE PAST YEAR AMERICAN EXPORTS OF RUBBER TOYS, balls and balloons reached a total value of \$1,289,229, the leading customers for these goods being: The United Kingdom, with imports having a value of \$555,589; Canada, \$109,625; Germany, \$97,489; the Netherlands, \$78,611; and Mexico, \$71,742.

## Elements of Cost in a 29 by 4.40 Balloon Tire

WITH the present wave of consumer demand for low-priced merchandise, it is often very difficult for the discriminating buyer who purchases on a value rather than price basis, to be able to measure tire standards to his own satisfaction. Aside from considerations of the quality of the tire itself, marketing conditions in the industry are as yet so unstable that even experienced rubber men are as much at a loss on the question as the general public.

When the balloon tire was first brought out it was in the de luxe class, being marketed as first quality in every respect. As the volume of production swung from high to low pressure tires and practically all new cars are equipped with the latter, the demand has required the introduction of a second line of balloon tires. It is not possible, however, to assume that, because a tire is sold at a low price, it is an inferior product. Unfortunately the tire industry has never yet seen the period when distress stocks of merchandise do not find their way into general retail channels to some degree.

It is the purpose of this article to take a popular size of balloon tire—the 29 by 4.40 since Ford has recently standardized on this number—and break it down into the cost elements, showing the variations possible due to cheaper materials, more efficient labor, and overhead savings, then touching in a general way on some of the merchandising variables.

The April *Tire Rate Book* quotes \$20.70 as a fair retail price for this tire. Yet 29 by 4.40 four-ply balloons are constantly advertised in the large cities at \$15 and frequently at \$12. In the accompanying tables, comparative costs are given showing an estimated cost of a first quality 29 by 4.40 balloon and a second quality tire based on today's raw material and labor markets.

On the basis of these figures it would seem that the figure of \$20.70 is not far out of line especially when it is considered that the tires are figured on today's rubber and cotton market, using ribbed smoked sheet at 42 cents and karded peeler cord at 43 cents, whereas when the above selling price was published tires in the hands of the retailers were made from 60 to 80 cent rubber and 50 cent cotton.

In breaking down the elements of cost in these tires, the first consideration is the carcass which consists of 4 plies of karded American peeler cord fabric, first quality being used in the No. 1 tire at 43 cents, and off-cotton, drop-ply fabric at 36 cents being used in the No. 2. In the No. 1 tire this fabric is processed four times either continuously or consecutively, first frictioned both sides, or gum dipped, then coated both sides with a high grade

### ESTIMATED COSTS OF 29x4.40 BALLOON TIRES

FIRST QUALITY				SECOND QUALITY			
MATERIAL	Lbs.	Lb. Cost	Total	MATERIAL	Lbs.	Lb. Cost	Total
4-Ply Cord Fabric, Frictioned Two Sides, Coated	6.	\$0.45	\$2.70	4-Ply Cord Fabric, Coated	6.	\$0.39	\$2.34
Two Sides	1.75	.38	.665	Wire Rubber Coated, Only	1.	.26	.26
Molded Bead				Bead Flipper, Frictioned,			
Bead Flipper, Frictioned	.60	.35	.21	Two Sides	.60	.35	.21
Two Sides	1.00	.44	.44	No Fabric, Rubber Cushion	.90	.40	.36
Breaker				Only			
Chafing Strip, Skim (1),	.50	.40	.20	Chafing Strip, Skim (1),	.50	.40	.20
Coat (1)	7.25	.319	2.21	Coat (1)	6.	.207	1.24
Tread and Gum Strips				Tread Not So Heavy			
Total Weight	17.10 Lbs.			Total Weight	15.00 Lbs.		
Total Material Cost			\$6.425	Total Material Cost			\$4.61
LABOR				LABOR			
Buffing, Cementing, Beads		.03		None, Bead Not Separate		.00	
Cutting Plies		.05		Cutting Plies		.05	
Splicing, Assembling		.13		Splicing, Assembling		.13	
Building Carcass		.30		Building Carcass		.30	
Finishing		.10		Finishing		.10	
Vulcanizing		.27		Vulcanizing		.27	
Inspecting, Wrapping		.05		Inspecting, Wrapping		.05	
Expense, 125% of Direct Labor		1.14		Expense, 125% of Direct Labor		1.14	
Airbag Service		.25		Airbag Service		.25	
Flap		.25		Flap		.25	
Total Factory Cost			\$8.995	Total Factory Cost			\$7.15
Advertising, Selling Expense (30 Per Cent Factory Cost)			\$2.70	Advertising, Selling Expense (30 Per Cent Factory Cost)			2.15
Profit (10 Per Cent)			.90	Profit (10 Per Cent)			.72
What Tire Should Sell to Dealer For			\$12.595	What Tire Should Sell to Dealer For			\$10.02
Dealer's Mark-up 33 1/3 Per Cent Gross Profit			6.30	Dealer's Mark-up 33 1/3 Per Cent Gross Profit			5.01
Retail Price of No. 1 Tire			\$18.895	Retail Price of No. 2 Tire			\$15.03

compound. This is the most vital part of the tire and even in second line goods it is not advisable to let down very much on the quality of the friction or skim compound. The two compounds employed here and comparative costs are given on the next page.

It will be noticed that on the No. 2 tire the gum dip or friction is omitted and the cord fabric is prepared for the tire by passing it through the calender only twice with a heavy coat of rubber on each side. While this is not the best practice, it is a possible economy, as it must

be remembered that a tire is a molded product, and regardless of how the rubber adheres to the cotton before the tire is made up and cured, under pressure conditions in molding, the rubber and cotton become almost homogeneous, the carcass of a tire made under these conditions compares very favorably in separation tests with the first quality product.

Although the molded bead is still used by the majority of tire manufacturers, the United States Royal Cord has been made successfully for many years by incorporating the wire cable in the tire as it is built. Kelly-Springfield has also gotten away from the separate bead within the last two years. Aside from the fact that no impairment of quality is suffered thereby, it seems feasible in making up a tire to meet a price to eliminate this costly operation for the more modern method. Another large tire concern which has lately adopted the new method is Seiberling.

Bead pocket or flipper needs no explanation, although in the tire where there is no molded bead it becomes a part of the chafing strip. The breaker strip fabric may be omitted with a fair degree of safety, substituting a heavy cushion of high grade rubber compound to take up the shocks between the tread and carcass showing a saving in both labor and material cost. The fabric breaker strip is still used in most high grade tires, however, as it prevents possibility of the tread coming off under severe strain.

Balloon tires require a tread with sufficient toughness to resist punctures owing to the greater road surface they cover, and also of sufficient flex to meet low pressure conditions. It will be noticed that on the No. 2 tire the weight of tread given is 1 1/4 pounds less. Examination of recent second-line balloon tires will show that there is less volume of tread than on the first line casings. This is accomplished by adopting designs with more open work and less crown, thus enabling a high reclaim content compound to be used. The less volume permits enough flexibility, and the reclaim has a tendency to make the tread harder and more resistive on abrasive tests. Two typical compounds follow.

FRICTION, SKIM, AND CUSHION COMPOUND			
No. 1		No. 2	
Lbs.		Lbs.	
Smoked Sheet, 85, @.42	\$35.70	Smoked Sheet, 75, @.42	\$31.50
M. R., 4, @.015	.06	H. T. Reclaim, 10, @.25	2.50
		M. R., 4, @.015	.06
Pine Tar, 2, @.40	.80	Pine Tar, 2, @.40	.80
Zinc Oxide, 4.75 @.075	.356	Zinc Oxide, 4.75 @.075	.35
Sulphur, 3.25 @.025	.244	Sulphur, 3.25 @.025	.24
Accelerator, 1, @.70	.70	Accelerator, 1, @.70	.70
Material Cost, .....	\$37.86	Material Cost, .....	\$36.15
MIXING, MILLING LABOR		MIXING, MILLING LABOR	
AND OVERHEAD, .....	2.67	AND OVERHEAD, .....	2.67
Labor		Labor	
Friction, .....	.99	Coat, .....	1.76
Coat, .....	1.76	Overhead, .....	1.58
Overhead, .....	2.48		
Total Cost 100 Lbs., .....	\$45.76	Total Cost 100 Lbs., .....	\$42.16
Pound Cost, .....	.458	Pound Cost, .....	.422

TIRE TREAD COMPOUND			
No. 1		No. 2	
Lbs.		Lbs.	
Smoked Sheet, 60, @.42	\$25.20	Smoked Sheet, 25, @.42	\$10.50
Tire Reclaim, 10, @.10	1.00	Tire Reclaim, 45, @.10	4.50
Carbon Black, 12.5 @.09	1.085	Carbon Black, 12.5 @.09	1.085
Zinc Oxide, 10, @.075	.75	Zinc Oxide, 10, @.075	.75
M. R., 3, @.015	.045	M. R., 3, @.015	.045
Pine Tar, 1.875 @.40	.75	Pine Tar, 1.875 @.40	.75
Sulphur, 2, @.025	.05	Sulphur, 2, @.025	.05
Accelerator, .625 @.70	.437	Accelerator, .625 @.70	.437
100	\$29.317	100	\$18.117
Labor		Labor	
Compounding, .....	.20	Compounding, .....	.20
Milling, .....	.41	Milling, .....	.41
Tubing Machine, .....	.75	Tubing Machine, .....	.75
Overhead, 90 Per Cent., .....	1.22	Overhead, 90 Per Cent., .....	1.22
Total Cost 100 Lbs., .....	\$31.897	Total Cost 100 Lbs., .....	\$20.697
Pound Cost, .....	.319	Pound Cost, .....	.207

Of course in a survey of this kind, it is possible only to give average figures on labor and overhead costs as these are bound to vary according to the conditions and locations where the plants are situated. Some of the smarter, wide-awake manufacturers are no doubt producing 29 by 4.40's cheaper than these figures. Other manufacturers whose costs are more are selling for less, and will continue to upset conditions until the banks who carry their paper call a halt.

Passing from the manufacturing sphere to that of merchandising, we find still more variables. Let us suppose the manufacturer's list on a 29 by 4.40 is \$12. This is the price that the small dealer who handles four or five makes of tires would pay. If he handled one brand exclusively and attained a certain volume, he would probably get from 5 to 10 per cent off the list. The theory is on volume accounts, shipping, billing, and handling expenses are reduced which enables this saving to be passed along to the dealer. On still larger accounts such as jobbers, the discounts run larger on the theory that there is no salesman's commission to pay.

In order to do business at a profit, the tire dealer should take a mark-up of 33½ per cent. This figure is what the large department stores need to do business on, and the tire dealer has not all of their possibilities of reducing overhead and carrying charges. But like every other business in this country today, the tire dealer is up against stiff competition. And just as the tire manufacturer allows inroads to be made upon his rightful profit, so the dealer makes concessions here and there to meet the conditions he encounters from time to time.

Commercial account selling by manufacturers is still carried on to a certain degree, the usual figure being 5 per cent above the dealer's list, which permits the dealer who gets a large volume discount from the manufacturer to make a bid for this business. Car manufacturers buy at the lowest figure which is very close to manufacturer's cost. These orders are in sizeable volume, however, permitting manufacturing economies, and should be apportioned lower distribution charges as they are shipped bulk and carry no salesman's commission or branch warehouse expense.

Of course, it would be a fine thing for the tire industry if tire costs and prices could be standardized, but the crude rubber situa-

tion precludes any such possibility. In fact the abnormal conditions in the market for the past year with the accompanying publicity in the daily press have tended to upset the situation further. So far, tire manufacturers have met this by increasing efficiency in the mill. But the answer as to why a 29 by 4.40 balloon tire sells from \$12 to \$20 is to be found on distribution avenue, rather than in variations in mill costs. The twenty-five per cent price cut just announced calls for closer supervision of both channels.

## Crude Rubber Symposium of the A. C. S., Rubber Division

Many representative and internationally known rubber chemists and technologists have accepted invitations to take part in the important symposium on crude rubber to be held by the Rubber Division of the American Chemical Society at its Jubilee Meeting in Philadelphia, Pennsylvania, September 7 to 10.

The symposium will be a comprehensive survey of the important botanical, chemical and engineering developments now in progress or likely to occur. References in the daily press have given the misleading impression that the symposium will offer opportunity for debate between plantation interests and those concerned with synthetic rubber. On the contrary, all the speakers are limited to the purely scientific, technical and economic aspects of their subjects, and absolutely no controversial subjects will be discussed. The occasion will bring out first hand knowledge of present and future developments both from the plantation and the manufacturing points of view.

The following list of speakers, who have definitely accepted invitations to participate in the symposium, assures a most valuable meeting in furtherance of the progress of the rubber industry:

Doctor A. van Rossem, Delft, Holland, "The Technology of Rubber on the Dutch Plantations."

Doctor Henry P. Stevens, London, England, "Recent Developments in the Preparation of Plantation Rubber."

Ernest Hopkinson, vice-president, United States Rubber Co., New York, N. Y., "Botanical and Chemical Developments in the Plantation Industry."

G. H. Carnahan, president, Continental Rubber Co., New York, N. Y., "The Botany and Agricultural Problems of Guayule Rubber."

Doctor David Spence, vice-president of the Continental Rubber Co., New York, N. Y., "The Chemistry of Guayule."

Doctor H. N. Whitford, The Rubber Association of America, New York, N. Y., "Wild and Plantation Rubbers of Africa and Tropical America."

R. P. Dinsmore, research director, The Goodyear Tire & Rubber Co., Akron, Ohio, "Study of the Physical Structure of Latex and of Raw Rubber with the Microscope."

Professor George L. Clark, Massachusetts Institute of Technology, Cambridge, Massachusetts, "The Structure of Rubber as Revealed by X-Rays."

William B. Wiegand, chemist and technologist, Binney & Smith, New York, N. Y., "A Comparison of the Physical Properties of Raw Rubber with those of Compounded Vulcanized Rubber."

Doctor E. B. Speer, rubber chemist, The Thermatomic Carbon Co., Pittsburgh, Pennsylvania, "Alternative Materials for Rubber."

Doctor A. D. Little, industrial technologist, Cambridge, Massachusetts, "Survey of the Economic Status of Rubber."

Dr. Philip Schidrowitz, consulting chemist, London, England, "The Direct Use of Latex."

Additions are expected to the above list and will be announced in the final program. The importance of the above symposium is certain to attract a large attendance of rubber chemists.

## Rubber in Hat Manufacture

### The Hatbag Industry—Types of Bags—Hatbag Presses—Rubber Tippetts and Tollikers—Other Uses for Rubber

By Joseph J. Dawson

#### The Hatbag Industry

NOTWITHSTANDING the almost universal use of rubber hatbags the hatbag industry is not as large as might be imagined.

When one considers that a hat manufacturing company producing 1,000,000 hats annually uses about twenty-four machines, six of which are equipped with bags that wear an average of from seven to eight weeks, and the remainder with bags wearing from eight months to a year, it may be readily appreciated that the hatbag business is small, when compared with other branches of the rubber manufacturing industry.

#### Development in Hat Presses and Bags

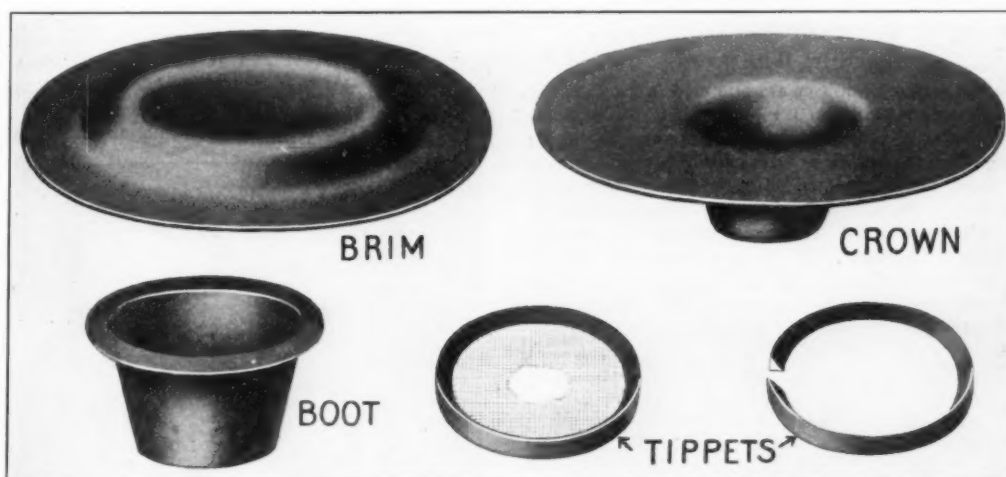
Rubber goods have for many years held an essential place in the hat manufacturing industry. Originally the use of rubber was confined to hatbags, but new products have been developed, and improvements made in the old ones during recent years. The

used. The saving accomplished in metal alone has more than compensated for all the costly experimenting necessary in effecting the transition. In the case of straw hats it is now only necessary to carry in stock hat blocks in quarter sizes, as the "Ivy Sweat," another rubber product having as its essential feature an adjustable elastic cord running circumferentially at the base of the sweat takes up the difference in size.

#### Types of Hatbags

There are four distinct types of hatbags in use at the present time and one hundred or more styles of each type. These four types are as follows: the crown, boot, inverse and reverse brim.

The crown bags are for use in the Cumings and Turner presses. The bags for both presses are essentially the same, the only differences being in the method of attaching and incidentally the method in which the hat is pressed. The dimensions of this



Crown, Brim and Boot Hatbags, also Tippetts, are Necessary Equipment for Hat Presses

longevity of the hatbag has been increased, and rubber, owing to its resilient and elastic qualities, has now replaced tools and forms formerly made of wood, steel, and mono metal.

The hatbag itself, a flat disk of high grade rubber stock, with a crown conforming to the general lines of the type of hat to be pressed, is by no means a new innovation. Quoting from *The India Rubber World*, August 15, 1892, "The manufacturers of straw and other hats have adopted for a long time the use of the rubber hatbag in forming the shape of these head coverings. . . . The rubber hatbag is shaped very much like a hat, the crown being more conical and the rim as broad as a Mexican sombrero." The same issue also states that bags do not altogether fill the requirements and that they have their points of unreliability. This condition, however, has changed, thanks to the development of rubber compounding and efficient hat pressing machines.

Straw and wool hat manufacturers today use the hatbag exclusively in place of the male unit of the metal block previously

type of bag range from 16 inches to 31 inches in diameter by 3/16 inch thick. The crowns are varied in shape and size ranging from 1½ inches in height for very low crowned straw hats to 5½ inches for derby wool hats and as high as 7½ inches for high silk hats.

#### The Cumings Hat Press

The Cumings press operates on the hydraulic principle, the bag being fastened under a steel ring about 1½ inches wide running around the outside edge of the flange of the bag. This ring is bolted to the dome of the press by a series of ten to twenty bolts running through the ring and the flange of the bag. A flange of felt is also placed under the ring between the pressing surface of the bag and the hat. When the bolts are set the bag makes its own seal.

The female hat block rests in the stationary bottom plate of the press. The top plate containing the bag, is a metal dome into which the water passes before it enters the bag. The press is fitted with an expansion tank by means of which the quantity of water

allowed to pass into the dome is regulated. This also partially regulates the pressing, as the press closes down and locks on the toggle joint principle. As soon as the press is closed a lever is thrown thus starting the operation of a steam pump, standard equipment of the press, and 150 to 200 pounds hydraulic pressure is exerted on the hat in the press through the distending of the bag. As the bag is locked in place in the press and its pressure is exerted against the hat, in the confines of a metal die, little or no wear or injury is caused by this pressure.

The Cumings press is used in blocking soft brimmed straw and wool hats and derbies. It can be used for pressing the brims of stiff straw hats but there is always the possibility of not completely pressing down the seams in the braid.

### The Turner Press

The Turner press operates on the hydrostatic principle. The same type of bag is used but only the crown of the bag comes in contact with the hat. A steel plate covering the entire flange of the bag is bolted to the dome of the machine, the bag making its own seal as in the case of the Cumings machine. When the press is closed this steel plate presses the brim of the hat while the pressure is exerted on the crown through the bag. A valve is opened allowing the water, at city pressure or approximately 125 pounds, to pass into the dome. After a minute another valve is turned releasing the pressure. It is necessary that the operator be experienced and use considerable care as the bags can be ruined should the pressure be turned on, or left on with the press open.

The boot type of bag is used as a jacket to protect the crowns of bags when used in the crown machines.

### Hat Brim Bags

The inverse and reverse brim bags are also used in the Cumings presses as auxiliary equipment in the pressing of soft brimmed straw and wool hats and derbies. These bags are attached to the press in exactly the same manner as the crown bags except for the fact that the center of the bag is bolted to the center of the dome to partially eliminate the possibility of rupture when the pressure is exerted, and to prevent the bag from distorting thus causing wrinkles or rolls in the edge of the brim. The inverse type of bag is used for pressing soft rolled hat brims or ones which turn up evenly all around the hat. The reverse type of bag is used for brims which tilt downward in the front and back as in the case of derby hats.

In performing the pressing operation with brim bags the press is used in the same manner as when the crown operation is performed, except that a flat disk of felt is placed between the pressing surface of the bag and the hat brim before the press is closed.

There is in use in the wool hat industry another type of bag which is about 25 inches in diameter, having a  $3\frac{1}{4}$  inch flange. The crown of this bag is 18 inches in diameter at the base and 10 inches high over all. The sides of the crown converge to a 65 $\frac{1}{2}$ -inch radius at the top of the crown. This bag is used for pressing bodies of wool hats, especially ladies' shapes, and for setting the nap on beaver hats and velours. Hats pressed by this type of bag are afterwards pressed between metal dies or in an open press.

### Rubber Tippet

Another rubber article used in conjunction with the hat bag is known as a tippet, a ring having a triangular cross section. The service performed by the tippet is to protect the bag from the effect of the angle between the side and top of the crown. It is made in two types, one of which is all rubber of a medium hard consistency and the other having a piece of heavy duck vulcanized across the bottom of the ring. The hat manufacturers have their own molds and presses for making the tippets.

### Rubber Tolliker

There is still another all rubber article used in manufacturing hats—the tolliker. It is a solid piece of medium hard rubber in the form of a truncated prism having a lower base 4 by  $2\frac{3}{4}$  inches,

and an upper base 4 by  $1\frac{1}{2}$  inches. It is used for turning the edges of brims where a welt is desired. It has almost completely replaced similar tools of wood and steel.

### Other Rubber Uses

Many other sundry rubber articles find varied and efficient uses in connection with the hat industry. The "Ivy Sweat" has for its principal feature a rubber thread running circumferentially at the base of the sweat. This thread may be tied at the back at any degree of tension desired, thus tightening the bearing surface of the sweat and making a more comfortable fit, also preventing the unpleasant and not too dignified chasing of a maverick hat on a windy day.

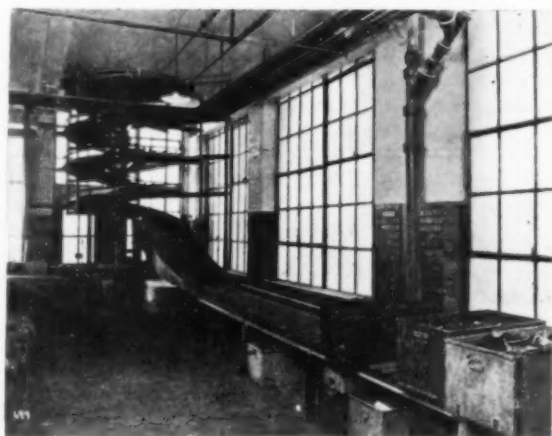
Hat cleaners and repairers use several types of bands and protective coverings in the plying of their trade, and of course lastly but by no means should it go unmentioned, the rubber hat cover, though not a part of hat manufacturing, is seen in wet weather protecting the headgear of our police and firemen.

Rubber hatbags and other specialties are made by several mechanical goods manufacturers, however, some hat manufacturers make their own bags from the raw stock with varying degrees of success.

## Conveyers in the Service of Supply

Molding rubber articles in hydraulic steam presses is not a process which readily lends itself to continuity or efficiency. In rubber footwear, for example, while admittedly the molded rubber shoe is superior to the hand last-built product, it is obsolete today because of the excessive cost as compared to modern open heat and pressure methods. In fact, molding costs have been the hardest group to cut of any rubber manufacturing operations.

Presses open and shut slowly; molds are heavy and hard to



Gravity Conveyor Utilized in Rubber Heel Production

handle, and curing time has not been reduced appreciably even with modern accelerators. These conditions have focused attention on an allied problem, that of conveying materials to and from the presses as efficiently as possible. Thus every modern press room has its conveyer system.

The accompanying photograph shows how gravity roller conveyers have been employed in the heel plant of the Federal Rubber Co., Cudahy, Wisconsin. The molded articles and scrap in box containers are ready to enter the spiral conveyer from the run, and are conveyed to the floor below for trimming and disposition of the scrap.

AMERICAN TIRES, BECAUSE OF THEIR GOOD QUALITY, ARE SAID TO BE VERY POPULAR IN MEXICO. The immediate outlook, however, has not been improved by the addition of the 10 per cent sales tax.

## Machining Crude Rubber on the Plantation

The Market Grades—How They Are Prepared—Types of Machines Used—What the Market Demands—Future Possible Changes in the Preparation of Plantation Rubber

**I**N this age of machines it is only natural to expect that our huge plantation rubber industry would make use of man's labor saving inventions. At one time early in its development plantation rubber suffered in competition with the Brazilian wild product owing to its great variability in the rate at which it vulcanized. This drawback was gradually overcome by a careful investigation into the methods of handling and treating first the latex and then the coagulum. In the steady growth of the plantation industry the economies and all round advantages of mechanical methods proved an indispensable factor.

### How the Crop Is Made Up

The crop that is collected and taken to the factory comprises various elements. These are:

**LATEX.** This is the elementary fluid that flows from the cut made into the bark of the tree. The latex is coagulated by acetic acid and the coagulum is machined into various market grades.

**BARK SCRAP.** After the latex has ceased flowing there is left a strip of rubber on the cut surface of the bark. When the tapper shaves off a thin section of bark the next morning, this strip of rubber comes off with the thin shaving. He collects this separately and it is known as bark scrap. It is usually a very high grade rubber after it has been cleaned of the bark shavings.

**SCRAP.** Scrap refers to the thin strip of rubber which lies on the tapping cut after the latex has ceased flowing. This differs from bark scrap on some estates where the strip of rubber is pulled off before the tapper makes his tapping cut. On other estates bark scrap and scrap are bulked.

**EARTH SCRAP.** Earth scrap forms a small item. It refers to that latex which overflows and runs to the base of the tree where it mixes with the earth. On most estates this earth scrap

Scrap Crêpe; Bark Scrap Crêpe; Earth Scrap Crêpe or Compo Blanket.

- (2.) SHEET. Smoked sheet.
- (3.) SPRAYED RUBBER.
- (4.) SLAB RUBBER.

### The Market Factor

Estates are established for profit as commercial enterprises. Since the price of their product depends upon the law of supply and demand, they are naturally concerned in giving to their customers just what is in largest demand. As a consequence, there has hardly been any intrinsic change in the method of preparation of raw rubber during the past ten years. While it is not possible to predict any radical changes in the types of "first latex" rubber, it may be taken for granted that no sudden departure from existing methods will occur in the near future. Manufacturers are not going to alter methods which are based on rubber grades that have been prepared according to long established standards of uniform procedure. If anything stands out preeminently in the preparation of rubber on the estate it is uniformity of product. A good and uniform product is the manufacturers' demand. A great advance was made in this direction when estates found that best results followed a bulking of their latex previous to coagulation. This bringing together into one huge tank latex derived from many sections of the estate tended to reduce the many individual factors which were responsible for a high variability in the raw rubber and which called forth continuous complaints from the manufacturer.

Unfortunately for the estates, the practice in the market at the present time is, and has been, to judge raw rubber by its outside appearance. Unscientific standards of appraisal obtain largely in the broker's office. The intrinsic properties of the product have



Firestone Tire & Rubber Co.

Rubber Plantation Factory

is burned up. On a few it is put through a special machine which cleans it free from earth and other matter and may be machined with other scrap rubbers.

### The Market Grades

Plantation rubber is placed on the market under different grades, the important ones are as follows:

- (1.) CRÊPES. No. 1 Latex Fine Pale; Shoe Sole Crêpe;



Making Plantation Sheets

thus earned less importance than fancy window dressing attention to its appearance. It has been abundantly proven that a good appearance is in no way correlated with the real quality of raw rubber. The appearance may indicate good supervision and care in preparation but it may also be due to very objectionable methods of preparation as, for instance, getting fine elastic sheets by using alum as a coagulant. Such sheets look good but vulcanize very much slower than those coagulated with acetic acid.

So long as this practice continues, estate managers are obliged to cater to it. Such "defects" as "bubbles," "rust," streakiness in crêpe, yellow color of pale crêpe, "spot disease" and so on can be overcome by a capable manager by following the printed suggestions issued in numerous manuals on estate practice.

### The Estate Factory

The estate factory constitutes a very important unit since it is here that the profits and losses of the organization are made. By carefully catering to the demands of the consumer and by maintaining a good, uniform product, a manager can be assured of success. Factory practice must be governed by simplicity both in operation and maintenance. The machinery must be fool-proof for the type of native laborer in the factory is not usually endowed with any "machinery sense."

The first important unit of machinery in any estate factory is the battery of rubber washing machines. These need a good water service. The general practice is to get the water supply by sinking brick or concrete circular wells from which the water is pumped to steel tanks supported on towers adjacent to the factory. The water is allowed to settle in a settling tank, after which it runs by gravity to the supply tank and thence to the machines.

The internal layout of the main factory is quite uniform throughout the Middle East. The building is of the steel frame type sheeted with galvanized corrugated steel. Reinforced concrete is sometimes used. The foundations are of concrete and the base floors are of solid concrete also to withstand the vibration of the several batteries of machines. Provision must always be made for adequate ventilation in all tropical buildings and this is very true of the factory where the heat and humidity are rather intense.

### Factory Operations

The factory unit is made up of various parts. The chief subdivisions may be listed as follows:

**COAGULATING SECTION.** The latex comes in from the fields and is poured into large concrete, tile-lined troughs, or into large Siamese jars, or small tile-lined tanks. On smaller estates it is put into small enamelled pans much like the bread pan of our

or market types required. The best latex is made into either smoked sheets or into crêpe form. If sheets alone are made, the operation is very much simpler than is the case with crêpes. The making of bark scrap, scrap and earth scrap crêpes requires much machining and washing and unless rubber is selling at good prices it hardly pays to machine the scrap rubbers.

Three principal machine types are used; namely, the washer, the macerator and the sheeteer. These are erected in a line and have a common engine-driven back shaft. The engine should be of the very simplest kind because, as mentioned, the type of native labor employed has no "machine sense." Engines of the vertical two-stroke type using crude oil as fuel, and having no valves have given excellent satisfaction. They can run for long periods without skilled attention. The oil burning engine is more economical, also.

The "drive" between engine and machines is either by belt, gearing or chain. Of course, the advantage is with the gearing or chain drive because they can be run at short centers, have a long working life and can be made practically noiseless in operation. Belts take up too much room and are affected by the humid climate. The transmission should always be provided with a safety instantaneous emergency operating gear, so that at any time the coolies working any of the machines can stop the main drive between engine and machines.

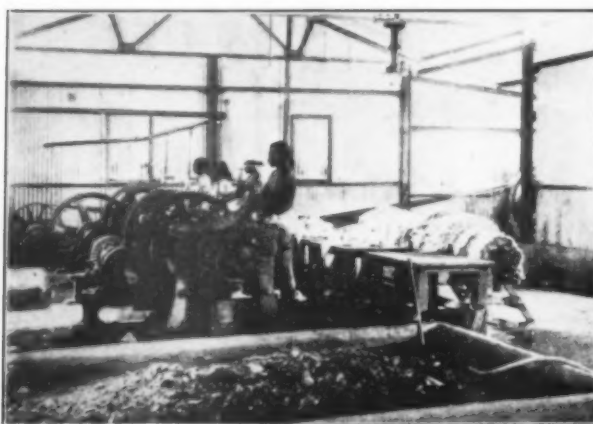
### The Machines

The usual minimum battery of machines is made up of these different units: one scrap washer or "Universal"; two macerators; one light marker; and three light sheeters.

Each machine is driven through helical machine-cut gearing by its own clutch which fits to the main back shaft.

### The Washer

The scrap washer that is most common is the "Universal," though one finds also the "Uniteers" and the "Niblock" in different sections of the Middle East. They are similar in principle. Each has its own good points. All the scrap rubbers enumerated above are passed through the washer to remove impurities. The washer has two heavy steel rolls with cast corrugated surfaces rotating in a trough. The inside lining of this

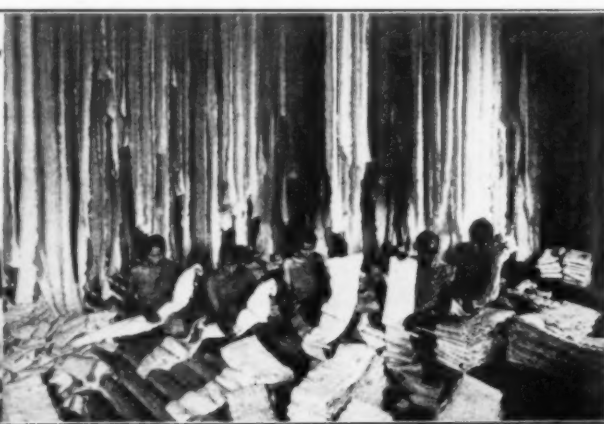


Making Plantation Crêpe

mother's kitchen. It is coagulated in the containers by means of a measured portion of acetic acid. It is first brought to a standard dilution before coagulation for the sake of a uniform product. The coagulum is then passed on to:—

**THE MACHINE ROOMS.** Here are housed the washing, crêping, sheeting and marking machinery.

The engineer designing the machine room has to take into consideration the amount of crop to be machined and the grades



Sorting Plantation Crêpe

trough is also corrugated. The scrap is fed into the running machine where the corrugations on the rolls, acting as kneading blades, take hold of the scrap, carry it down, round and up against the corrugations of the trough. As the scrap is thus kneaded every bit of it is opened up and acted upon by steady streams of washing water. From 15 to 20 minutes are used to clean a batch of scrap. The bark removed is caused to float off on the outgo of the water and stones and other heavy im-

purities are removed through openings in the bottom of the trough.

### The Macerators

From the washer the rubber is then passed to the macerators or crèping machines. These are an adaptation of the mangle or calender. Each machine has two rolls which rotate together though one roll has a speed different from that of the other. This difference in speed of rotation causes a frictioning or tearing effect when rubber is fed between them. The rolls are made of chilled or close-grained cast iron. After the rubber passes through the macerating or crèping process it is then ready to be sent to the drying sheds as crèpe. The grade of this crèpe will be determined by the quality of rubber that has been used in its production and also by its general appearance.

For heavy macerating, a large diamond pattern or deep spiral pattern is made on the rolls. Bark scrap, for instance, would be first macerated on a machine having such deep diamond rollers and then crèped on small diamond rollers and finished on smooth rollers. At each operation the rubber is constantly subjected to a fine stream of water to remove all impurities and excess chemicals.

Coagulum from the first grade latex, (No. 1 latex) is crèped on rolls having small elongated diamond patterns and then finished on smooth rolls.

### The Sheeters

The machine for sheeting has two smooth rolls. The marker has rolls profiled with a small square diamond pattern. Sheets are marked by this machine before being sent to the smoke shed. There is a practical reason for this. It has been found that the sunken part of the diamond pattern will prevent sheets from sticking to one another while close packed for shipment, owing to the air pocket provided by the depressions of the pattern.

The sheeting machine is built of a much lighter type than the macerator. It can be easily adapted for hand or power drive. The coagulum is passed through the sheeteer for the purpose of pressing out water and excess serum. There are three sheeting machines in a unit battery. The rolls in each of these are set to roll a different thickness of sheet and thus ensure an equal finish. For example, as the coagulum comes from the coagulating container it may be one inch thick. The first machining reduces it to one-half inch thickness; the second, one-quarter; and the third, one-eighth inch. It is then put through the marker. The work is so arranged that it runs smoothly, the coagulum going from one machine to the other with no chance of confusion on the part of the native coolie attendants.

### Shoe Sole Crèpe

The thin layers of pale crèpe that would ordinarily be marketed as pale crèpe are passed through this battery of sheeting machines. The several layers of crèpe are easily pressed together to form the thick blanket of shoe sole crèpe. Good plantation crèpe for shoe soles readily rolls together under light pressure and reveals no signs of the different layers of which it is built owing to the fact that under tropical conditions the crèpe is soft. In colder climates, after the same kind of crèpe has been stored, it requires cementing compounds and heavy pressures to build it up into shoe sole crèpe and the result is never equal to the sole crèpe made on the plantations.

### Sprayed Rubber

The Research Department of the United States Rubber Co., working on its own plantation in Sumatra, has developed the Hopkinson process for the preparation of sprayed or dry rubber. This is a special process and was made possible by cooperative efforts in the same unit organization; since in this case consumer and producer come under one main organization. Other estates have not been so fortunately placed and so have had to supply the

market with the kind of rubber in greatest demand. At present there are many estates which ship their latex directly to the buyer thus doing away with coagulation and all the subsequent machining needed to prepare market grades. But the big majority of plantations are preparing their product along the old established lines which can be depended upon to find a ready market. A small attempt has been made to prepare so-called "slab rubber." Slab is known to have specially rapid vulcanization properties and a general superiority over sheet and crèpe. Slab is the rubber produced by allowing the latex to coagulate naturally, that is, without the use of artificial agents and then this coagulum is allowed to "mature" and is marketed without being subjected to machining. But the discovery of organic vulcanizing accelerators has worked against slab rubber becoming a factor in the market.

### The Drying Shed

Crèpe, as it leaves the macerator or crèping machine, is taken to the drying shed. Crèpe is usually made into thin lengths measuring from 10 to 20 feet long and about 6 inches wide. It is hung from racks and allowed to dry in a natural way. It is a slow process, but it pays to supervise it carefully so as to produce the pale, unblemished first grade crèpes so favored by the market. The temperature, humidity and air circulation are important factors in the drying process and must be given due consideration. Otherwise there is danger of inviting bacterial or fungal action on the crèpe with subsequent multi-colored markings or blemishes which the market penalizes very heavily.

### The Smoke House

From the sheeting machines and the marker the sheets are passed on to the smoke shed. This is usually a two story building sheeted with galvanized steel or sometimes with asbestos board. Open furnaces are placed in the lower story. These are fired so as to generate a dense smoke which, traveling upward through perforations in the ceiling, completely floods the upper story. Coconut husks, jungle wood and thinned out rubber trees make up the fuel used. The fireman must be experienced in the use of his material and must be "on the job" as we say, since the smoking can enhance or mar the product very much.

### Packing the Rubber

In this place the dry rubber from the crèpe house and the smoke house is collected for packing. In spite of numerous recommendations and the invention of other satisfactory methods the greater part of the rubber in the Middle East is still exported in wooden cases. The rubber estate inherited these cases from the older tea estates. The wooden cases are easily put together on the estate and are quite satisfactory. Strange to relate, there has never been any general attempt to improve on the mode of packing. Suggestions such as to line the boxes with lower grade crèpe or with single sheets have never been taken up. The reason is, no doubt, to be found in the fact that the consuming market has never encouraged such practice by paying a slightly higher price for the product so packed. The case packing method seems to avoid the objection of other methods where the rubber, in those packages which lie lowest in the ship's hold, becomes consolidated into one large solid block owing to the heat and weight pressure of the packages above. Many cases are smashed in transit, yet they remain popular.

Estates usually do quite a bit of "window trimming" to the crèpe and sheets. Oil streaks are cut out, crèpe strips of the same color must be kept together, sheets must be examined carefully for detection of bubbles or for "rust" and so on. Everything about the place must be kept clean. For it is in the packing that so much depends on catching the broker's eye and in bringing the market's top price.

# What the Rubber Chemists Are Doing

## Report of the Sub-Sub-Committee on Abrasion Testing to the Performance Test Sub-Committee of D-11 of the A. S. T. M.

THIS report covers the work to March 16, 1926, of the American Society for Testing Materials' Abrasion Testing Committee appointed at the Cleveland meeting of D-11 on October 28, 1925.

The status of abrasion testing at this time is illustrated by the following quotation from a report presented at that meeting:

The economic importance of abrasion testing is so great that we believe a large amount of research work along this line is justified. Abrasion testing at the present time is insufficiently advanced to enable us to write abrasion tests into existing specifications.

The Abrasion Testing Committee was charged with the duty of investigating abrasion testing and of carrying on the necessary research to make this form of testing more effective.

After a careful analysis of the problem, it was agreed that abrasion testing must be comparative. Accordingly it was necessary to choose and test at least two tentative standards. The requirements for these compounds were that they should be widely different in abrasion resistance and that they should be easily duplicable.

Since stearic acid and large amounts of accelerator tend to smooth out variability in crude rubber, these features were incorporated in the compound. Hexa was used because of its long successful use and because it could readily be obtained as a

uniform chemically pure material. "Special" zinc oxide and "Micronex" carbon black were chosen so that all laboratories would use pigments of the same brand.

A large batch of each of these compounds was milled on a 16 by 42 mill and cured slabs were sent to about twenty laboratories

for test. Tensile tests were requested as well as abrasion tests, in order to have all pertinent information available for future reference.

The same laboratories were requested also to mill up these two compounds and test them over a range of cures in order to obtain information as to the duplicability of the compounds.

TABLE 1  
COMPOUNDS INVESTIGATED

	Parts by Weight	
	A	B
Pale crepe .....	920	920
Sulphur .....	37	37
Hexa .....	28	9
Special zinc oxide .....	1,035	224
Carbon black (Micronex) .....	0	251
Stearic acid .....	9	9

Cure of A, 61 minutes at 141 degrees C.  
Cure of B, 129 minutes at 141 degrees C.

TABLE 2  
ABRASION RESISTANCE OF SLABS SENT OUT BY THE NEW JERSEY ZINC CO. AND TESTED IN 15 DIFFERENT LABORATORIES

Rubber Company's Number	Testing Machines	Abrasion Resistance Compounds	
		A	B
1	(a)	100	154
3	(a)	100	142
6	(a)	100	134
7	(a)	100	120
8	(a)	100	138
9	(a)	100	127
11	(a)	100	146
12	(a)	100	171
13	(a)	100	170
15	(a)	100	165
17	(b)	100	144
2	(c)	100	173
4	(c)	100	199
6	(c)	100	149
10	(c)	100	150
14	(e)	100	163
5	(f)	100	149
5	(g)	100	116

(a) The New Jersey Zinc Co. machine (Feldspar Track). (b) United States Rubber Co. machine. (c) The New Jersey Zinc Co. machine (Quartz Track). (f) The New Jersey Zinc Co. machine (Alundum Track). (g) Goodrich loose abrasive machine.

### Summary of the Data Received

1. The abrasion tests on slabs sent out by the Committee and tested in 15 laboratories showed that Compound B had a greater abrasive resistance than A in every case. This increase in abrasive resistance was in the neighborhood of 50 per cent. (See Table 2.)

2. In general the results of the tests on the slabs sent out by the committee agreed with the tests on compounds milled in the individual laboratories (See Table 3.) In the latter case, however, the abrasion resistance of Compound B was relatively better than in the case of the slabs sent out by the Committee. We believe that

TABLE 3  
ABRASION RESISTANCE OF COMPOUNDS MIXED BY COMPANY MAKING TESTS

Rubber Company's Number	Testing Machines	Compound A					Compound B					Mill	Friction Ratio
		Cures in Minutes					Cures in Minutes						
		15	30	60	90	120	30	60	90	120	150		
		Abrasion Tests					Abrasion Tests						
6	(a)	..	..	100	..	..	..	..	161	..	6x12	1.40	
8	(a)	30	75	100	86	83	43	115	161	182	203	6x12	1.375
16	(a)	..	..	100	101	101	..	116	196	220	..	6x12	1.40
12	(a)	30	69	100	106	96	45	132	209	220	235	6x12	1.4
13	(a)	..	..	100	..	..	..	..	..	170	..	..	..
15	(a)	..	..	100	..	..	..	..	..	225	..	6x12	1.40
13	(b)	77	102	100	74	78	97	108	146	158	145	..	..
17	(b)	..	..	..	..	..	..	..	..	..	..	8x12	1.25
6	(c)	..	..	100	..	..	..	..	..	158	..	..	..
9	(c)	..	..	100	..	..	..	..	..	148	..	width 18"	1.51
14	(c)	50	82	100	113	88	91	125	162	146	154	6x14	1.27
11	(d)	..	..	100	..	..	..	..	..	278	..	12x12	1.40
18	(e)	..	..	100	..	..	..	..	..	129	..	..	..
5	(f)	..	..	100	..	..	..	..	..	150	..	12x24	1.05
5	(g)	..	..	100	..	..	..	..	..	117	..	..	..
18	(h)	..	..	100	93	..	..	162	..	147	..	8x16	1.30

(a) The New Jersey Zinc Co. machine (Feldspar). (b) United States Rubber Co. machine. (c) The New Jersey Zinc Co. machine (Quartz Track). (d) Miller tumbler. (e) Leather machine (Bureau of Standards). (f) The New Jersey Zinc Co. machine (Alundum Track). (g) Goodrich loose abrasive. (h) Goodyear machine.

this is due to variations in milling treatment. The compounds which were sent out by the Committee were milled on a fairly large mill, while the others were mostly milled on smaller mills. P. L. Wormeley of the Bureau of Standards is checking the effect of milling.

3. The tensile data, covering the tests over a range of curés, showed very satisfactory checks, especially when we consider that in many cases pigments of different source and origin were used.<sup>1</sup> The fact that variability in testing is the most important factor in duplicating results is shown by the analysis of Tables 4 and 5, which is given in Table 6. The tests on the supposedly uniform slabs, which were sent out by the Committee were practically no better than the tests on compounds mixed in the individual factories.

### Conclusions

The results to date are encouraging, but must be considered as only tentative. The Committee plans to repeat this work with modifications suggested from the experience gained in this preliminary series of tests.

<sup>1</sup> The cooperating laboratories did not use the specified pigments in every case.

### Future Work

In repeating this work, each member of the Committee will make up a set of slabs for distribution to the cooperating laboratories. The conditions under which these stocks are milled and tested will be standardized rigidly.

One of the conditions which must be controlled is moisture. Some preliminary unpublished results from the laboratory of The New Jersey Zinc Co. show that exposure to a relatively high humidity lowers the abrasive resistance and that Compound A is affected more than Compound B. This probably accounts in part for divergencies of 20-30 points in abrasion resistance when rechecks by several of the laboratories were attempted, two months after the original tests were made.

The membership of the Committee reporting these tests comprised the following: Chairman, Frank G. Breyer; W. W. Evans, E. A. Van Valkenburgh, C. W. Sanderson and P. L. Wormeley. They are grateful for the splendid cooperation in the work of the assisting laboratories. The aid of any other laboratories that may desire to join in the work of the next series of tests will be welcomed by the Committee if they will communicate with the Chairman.

The accompanying tables contain the test data in detail:

TABLE 4  
TENSILE TESTS ON COMPOUND A—60 MINUTES CURE

Rubber Company's Number	Testing Machines	Load at Elongations of			Tensile Strength at Break	Per Cent Elongation
		150%	300%	450%		
1	(a)	425	937	1,975	3,360	590
1	(b)	398	896	1,848	3,720	635
2	(b)	420	920	1,935	3,170	585
3	(a)	...	770	1,660	3,480	605
3	(b)	...	890	1,910	3,540	610
4	(b)	446	896	1,755	3,150	606
5	(a)	480	900	1,970	3,500	590
5	(b)	480	1,000	2,200	3,905	600
6	(a)	395	910	1,950	3,545	595
6	(b)	450	1,000	2,260	4,150	612
7	(b)	452	932	2,013	3,473	588
8	(b)	391	848	1,890	3,758	600
9	(b)	475	1,090	2,150	4,215	615
10	(a)	518	1,068	2,230	3,485	549
11	(a)	295	1,010	1,980	3,700	600
11	(b)	425	900	1,835	3,740	620
12	(a)	360	805	1,750	3,070	562
12	(b)	350	860	1,925	3,200	562
13	(a)	400	810	1,815	3,325	580
13	(b)	420	940	2,075	3,550	590
14	(a)	350	750	1,650	3,120	600
14	(b)	506	1,680	2,305	3,840	600
15	(b)	480	980	2,120	3,536	590
16	(a)	510	1,070	2,190	3,900	615
16	(b)	460	1,065	2,260	3,935	600
17	(a)	320	800	1,840	3,680	620
17	(b)	370	1,000	2,000	3,670	600
18	(a)	420	920	1,920	3,300	570
18	(b)	400	880	1,900	3,040	578
19	(a)	400	923	2,020	3,692	610
19	(b)	400	923	2,060	3,763	610

(a) Mixed in Rubber Factories. (b) Sent out by The New Jersey Zinc Co.

TABLE 5  
TENSILE TESTS ON COMPOUND B—120 MINUTES CURE

Rubber Company's Number	Testing Machines	Load at Elongations of			Tensile Strength at Break	Per Cent Elongation
		150%	300%	450%		
1	(a)	473	1,192	2,530	4,000	608
1	(b)	454	1,170	2,300	3,865	600
2	(b)	395	1,075	2,305	3,635	600
3	(a)	...	1,020	2,320	3,650	575
3	(b)	...	980	2,120	3,670	597
4	(b)	416	1,033	2,214	3,617	600
5	(a)	390	1,220	2,520	4,050	630
5	(b)	415	1,240	2,220	4,100	590
6	(a)	430	1,150	2,415	4,212	617
6	(b)	515	1,360	2,600	3,945	575
7	(b)	461	1,111	2,285	3,816	600
8	(b)	327	964	2,098	3,805	600
9	(b)	465	1,325	2,675	4,230	610
10	(b)	457	1,225	2,380	3,530	547
11	(a)	530	1,319	2,570	4,200	610
11	(b)	400	1,070	2,350	4,170	650
12	(a)	225	1,150	2,525	3,350	550
12	(b)	350	1,125	2,400	3,540	562
13	(a)	405	1,275	2,665	4,150	575
13	(b)	405	1,220	2,650	3,540	530
14	(a)	520	1,370	2,980	4,080	560
14	(b)	540	1,480	2,705	3,940	580
16	(a)	465	1,250	2,635	3,900	620
16	(b)	495	1,250	2,635	3,900	585
17	(b)	460	1,107	2,300	3,592	590
17	(a)	430	1,200	2,600	4,220	590
17	(b)	460	1,300	2,700	3,940	562
18	(a)	400	1,120	2,400	4,080	620
18	(b)	384	930	2,100	3,960	610
19	(a)	440	1,249	2,630	4,047	585
19	(b)	440	1,235	2,520	4,118	595

(a) Mixed in Rubber Factories. (b) Sent out by The New Jersey Zinc Co.

TABLE 6  
SUMMARY TABLE SHOWING THE ACCURACY OF DUPLICATING TEST RESULTS

Compounds Mixed in Rubber Factories	Compound A. 60 Min. Cure				Compound B. 120 Min. Cure					
	Load lbs./sq. in. at Elong. of			Tensile Strength at Break	Per Cent Elong.	Load lbs./sq. in. at Elong. of			Tensile Strength at Break	Per Cent Elong.
	150%	300%	450%			150%	300%	450%		
Low .....	350	770	1,650	3,070	562	325	880	1,950	3,350	535
High .....	510	1,070	2,190	3,900	620	530	1,170	2,980	4,220	630
Average .....	400	881	1,888	3,455	595	437	1,179	2,520	3,965	591
Average deviation from average .....	36	86	132	222	15	42	113	156	207	24
Per cent deviation.....	9.0	9.8	7.0	6.4	2.5	9.6	9.6	6.2	5.2	4.1
Sent out by The New Jersey Zinc Co.										
Low .....	356	848	1,890	3,150	549	327	930	2,098	3,530	547
High .....	518	1,080	2,305	4,215	635	515	1,480	2,705	4,170	650
Average .....	433	955	2,030	3,605	597	434	1,163	2,400	3,840	589
Average deviation from average .....	38	65	136	239	14	42	135	178	189	19
Per cent deviation.....	8.9	6.8	6.7	6.6	2.3	9.7	11.6	7.4	4.9	3.2

## Oxidation of Rubber Exposed to Light<sup>1</sup>

By Ira Williams<sup>2</sup>

Oxidation of rubber may take place in three ways: (1) deterioration throughout the rubber, (2) formation of a film on the surface of the rubber article, and (3) cracking or checking. Experiments to demonstrate the catalytic effect of light were made both in the sunlight and under artificial light, and by varying the conditions the different types of oxidation were produced. Light of short wave length is most effective in producing surface oxidation, and in general the amount of oxidation varies with the intensity of the light. Ozone is concluded to be the active cause of cracking, but it has no effect on unstrained rubber. Cracking can be prevented by using copper salts to catalyze surface oxidation.

Surface oxidation retards cracking and by catalyzing oxidation of the surface by means of copper salts checking can be retarded. Whether or not the points of unsaturation, which are generally considered as points of attack by ozone, are saturated by surface oxidation has not been determined. In any case the production of an oxidized surface can be effectively used as a means for the control of cracking. One convenient method of protection consists in washing the surface with an alcoholic solution of a copper salt such as copper chloride which catalyzes oxidation of the surface. The protecting surface develops in a few hours and the rubber underneath is not affected.

Compounds containing zinc oxide are more easily protected than pure gum type compounds. The zinc oxide assists in the formation of copper oxide, which is known to be an active catalyst for the decomposition of ozone. This probably accounts for part of the protecting action. Manganese salts give much less protection. Any film which can be applied to the surface of the rubber and which is not attacked by ozone will give efficient protection as long as the film remains unbroken.

<sup>1</sup> Presented before the joint meeting of the Division of Rubber Chemistry and the Akron Section of the American Chemical Society, Akron, Ohio, February 22 and 23, 1926.

<sup>2</sup> Firestone Tire & Rubber Co., Akron, Ohio.

## Chemical Patents

### The United States

1,587,537. **MOLDED RUBBER.** Finely ground vulcanized rubber is molded under heat and pressure and hardened by means of heat in an atmosphere of oxygen.—C. C. Loomis, assignor to Loomis, Stump & Banks, both of Yonkers, New York.

1,587,622. **TREATMENT OF RESINS.** A resin gum ester is made by heating resin in a vessel with glycerol, rubber and suitable catalyst.—Cyrus F. Willard, San Diego, California.

1,588,150. **RUBBER PAINT.** A paint is made by devulcanizing old rubber by fusion. Mixing it with melted fossil resin and while hot adding to the fused mixture a rubber solvent thinner. To the thinned mixture about 10 per cent of its weight of zinc sulphate is added.—George A. Shine, St. Louis, Missouri.

1,589,757. **ACCELERATOR FOR RUBBER VULCANIZATION.** A master batch of accelerator made by mixing thiocarbonyl with an excess of metallic oxide and a carrier, exposing the batch to ammonia under pressure until a reaction occurs producing diphenylguanidine.—Albert F. Hardman, assignor to Kelly-Springfield Tire Co., both of Cumberland, Maryland.

1,590,644. **INSULATING COMPOUND.** A composition comprising slate powder approximately 40 to 70 per cent; rubber from 15 to 25 per cent; pitch from 2 to 10 per cent and vulcanizing material including coloring matter from 15 to 25 per cent.—Cornelius Pickstone, Radcliffe, England.

1,591,132. **PROCESS FOR THE TREATMENT OF RUBBER.** A vulcanized rubber dough is produced by first treating a rubber solution to form a self-vulcanized gelling solution, and mixing this solution before it sets into a gel with a suitable proportion of a rubber precipitant with formation of a vulcanized dough.—Fordyce C. Jones, London, England.

1,591,439. **VULCANIZATION OF CAOUTCHOUC AND PRODUCT OBTAINED THEREBY.** Vulcanizing caoutchouc in the presence of aryl thiazols.—L. B. Schrell, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,591,440. **ART OF MANUFACTURING THIAZOLS.** A method of making aryl thiazols that comprises heating an aryl substituted thiourea in the presence of sulphur.—L. B. Schrell and C. W. Bedford, assignors to The Goodyear Tire & Rubber Co., all of Akron, Ohio.

1,591,441. **VULCANIZATION OF RUBBER AND PRODUCT OBTAINED THEREBY.** This is essentially similar to 1,591,439 above.—L. B. Schrell, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,591,454. **VULCANIZED MATERIAL AND PROCESS.** Vulcanizable materials are heated and into them is injected pulverized sulphur in steam suspension to form the ingredients hydrogen sulphide and sulphur dioxide gases, then subjecting the mass to agitation under heat to form a constantly changing cellular mass in honeycombed condition, resulting in the vulcanization of the material.—George A. Henderson, St. Albans, West Virginia.

1,591,767. **USE OF LUBRICANTS IN THE VULCANIZATION OF RUBBER ARTICLES.** The method consists in dusting the article with finely powdered sericite, placing it in a mold and curing it under pressure with heat.—Charles E. Maynard, Northampton, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

1,589,325. **Electrodepositing organic material such as rubber upon porous objects of non conducting material such as fabric.** S. E. Sheppard and C. L. Beal, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,326. **Electrodeposition of organic matter such as rubber and cellulosic compounds.** S. E. Sheppard and C. L. Beal, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,327. **Electrodeposition of coatings of cellulosic compounds.** L. W. Eberlin and C. L. Beal, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,328. **Aqueous emulsions of electrodepositable cellulosic compounds and coalescing agents therefor.** L. W. Eberlin and C. L. Beal, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,329. **Process of electrodepositing rubber upon a metal wire.** S. E. Sheppard and L. W. Eberlin, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,330. **Aqueous emulsion containing electrodepositable rubber and a cellulosic compound.** S. E. Sheppard and L. W. Eberlin, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,331. **Aqueous emulsion of unvulcanized rubber and sulphur.** S. E. Sheppard and L. W. Eberlin, assignors to Eastman Kodak Co., all of Rochester, New York.

1,589,332. **Electrodeposition of coatings comprising rubber and a cellulosic compound.** S. E. Sheppard and L. W. Eberlin, assignors to Eastman Kodak Co., all of Rochester, New York.

### The Dominion of Canada

261,443. **PAVING BLOCK.** Vulcanized molded blocks of plastic composition 25 to 75 per cent; mineral admixture 70 to 10 per cent; sulphur 5 to 15 per cent. The plastic composition is made from waste vulcanized rubber scrap in combination with animal or vegetable residues.—Edmond Draillette, Paris, France.

261,822. **SEAL FOR CONTAINERS.** A container closure provided with a sealing material comprised of a rubber base dried and conserved from a latex emulsion.—The General Rubber Co., New York, N. Y., and The Dewey & Almy Chemical Co., Cambridge, Massachusetts, assignees of Ernest Hopkinson, New York, N. Y., and Bradley Dewey, Cambridge, Massachusetts, all in U. S. A.

262,015. **RUBBER VULCANIZATION.** A process combining the rubber with a vulcanizing agent and the steam blown reaction product of acetaldehyde and a primary aromatic amine and vulcanizing the rubber.—The Roessler & Hasslacher Chemical Co., New York, assignee of Adrien Camron, Tottenville, both in New York, U. S. A.

262,483. **RUBBER ROLLER PRODUCTION.** A vulcanized rubber produced from ingredients mixed in the following proportions: crude rubber 25 parts, oxide of zinc 15 parts, wood pulp 50 parts, and sulphur 10 parts.—Thomas P. D. Marshall and Joshua Hirst, assignee of one-half interest, both of Wingham, Ontario, Canada.

### The United Kingdom

250,167.\* **RUBBERIZED MATERIALS.** Dispersions of rubber such as latex are applied to water-repellent materials in the presence of a "polar compound" or wetting agent. Polar compounds are those in which sections of the molecule have different affinities for different substances.—General Rubber Co., assignees of M. C. Teague, 561 West 58th street, New York, N. Y., U. S. A.

250,279. **RUBBER COMPOSITIONS.** These are compounded from natural or concentrated latex and 50 per cent or upwards, calculated on the dry rubber, of filling materials which average about a tenth of a micron in size. Among such filling materials are natural clays like bentonite, magnesium carbonate, zinc oxide, soapstone, talc cements and carbon.—W. B. Wiegand, Kitchener, Ontario, Canada.

250,623. **IMPREGNATING FIBROUS MATERIALS.** Impregnation is effected with a mixture of rubber latex and soapy solution or emulsion then subjecting the goods to a medium which coagulates rubber, and washing and drying.—E. S. Cohen, 43 Stadhouersplein, The Hague, Holland.

250,639. **RUBBER COMPOSITION.** Latex paste is mixed with gradually added vulcanizing and compounding ingredients under such conditions that the paste does not lose its reversible properties, until a foamy paste is formed, which paste is then dried.—K. D. P., Ltd. 7, Gracechurch street, London.

250,640. **TREATING LATEX.** Rubber, gutta, balata, or like latices are converted into paste-like or solid water-soluble masses by heating them with hydrolyzing agents whereby materials already present in the latices are converted into protective colloids. The water is then removed from the heated latex. The paste may be worked directly into compounded rubber.—K. D. P. Ltd., 7 Gracechurch street, London, England.

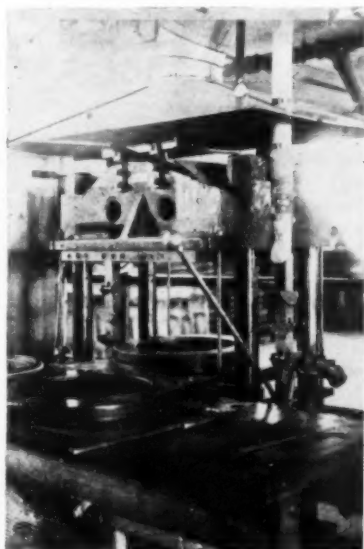
251,005. **VULCANIZATION ACCELERATORS.** Vulcanization accelerators are made by reacting the product of condensation of equal molecules of an aromatic amine and an aliphatic aldehyde with additional aldehyde. A typical example of the use of this product is as follows: 100 parts of rubber, 5 parts of zinc oxide, 3.5 parts of sulphur and 1 part of the condensation product containing 3 molecules of aldehyde to 2 of aniline are vulcanized at 40 pounds steam pressure in 20 minutes.—C. O. North, Tallmadge, Ohio.

\*Not yet accepted.

## New Machines and Appliances

### Mechanical Loading Attachment for Vulcanizing Presses

THE mechanical device here pictured is designed for loading vulcanizing presses, reducing the number of molds required for maximum production and eliminating the manual labor of the operator. The level of the various press platens is controlled by a single lever in such manner that they may be selectively brought to a loading position and latched opposite a fixed bench located in front of the press and at a height convenient to the operator. This permits the molds to be quickly and easily slid from the bench to the plate and vice versa. The press itself is designed with special regard to reducing steam consumption and maintenance expense.—Farrel Foundry & Machine Co., Ansonia, Connecticut.

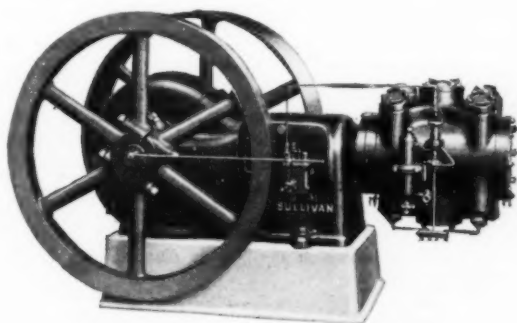


Farrel Press Loading Device

### Single Stage Air Compressor

Very few rubber manufacturing plants are operated without the aid of compressed air as accessory power equipment. Such machines, therefore, have special interest for rubber factory engineers.

The picture here shown represents a single stage air compressor with force feed lubricator, and centrifugal ball unloader for automatic start and stop control. By the latter device a constant



Sullivan Type WG-6 Air Compressor

air pressure is maintained by automatically interrupting the compression of air when the desired pressure is reached. This appliance holds the pressure within 5 pounds of the desired amount.

Of similar design is the two stage compressor in which the compression is accomplished in two stages instead of one. This has attendant advantages of power economy and better distribution

of the load and of working strains than is possible in a single stage compressor of equal capacity.—Sullivan Machinery Co., 122 South Michigan avenue, Chicago, Illinois.

### Electric Tachometer

Tachometers or speed indicators are essential for determining machinery speeds in general. The tachometer here pictured is of special interest because of its long distance and recording features. The instrument has a D. C. voltmeter movement specially designed for use in connection with magnetos and thus particularly adapted for tachometer work. There is practically no limit to the distance possible between instrument and magneto. For convenience 15 feet is specified but can be varied to suit. The instruments can be made to indicate all commercial ranges of speed.

The charts are either circular or strip form according to which is better suited to the case in hand. The clock revolving the chart is furnished for different speeds from 6 to 24 hours per revolution. Thus it is always possible to tell from the chart record the exact time at which certain conditions took place. A combination of indicating and recording instruments can be made. In this case the indicator is installed in the engine room while the recorder is located in the supervising office. The records are permanent and can be filed as engineering data and for production studies.—The Bristol Co., Waterbury, Connecticut.



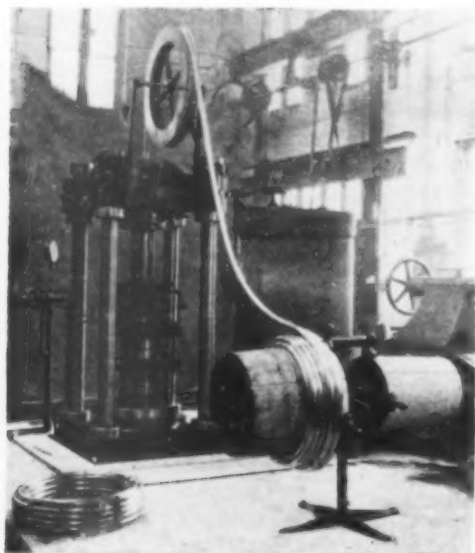
Bristol's Recording Tachometer

### Lead Extrusion Press

Lead extrusion presses have been in use over 75 years for making lead pipe. As rubber working equipment they are an essential feature for encasing and curing molded garden hose.

The lead press is of vertical type, as here pictured. It has a double acting ram fitted with leather packings, copper lined hydraulic cylinders, and heavy cross-head supported upon four steel columns with forged heads and intermediate adjusting nuts. The press is mounted upon a cast-iron plate and is provided with heavy hydraulic valves, gage and pipe connections to the operating hydraulic pumps. The supply of lead is furnished from a melting kettle equipped with a sheet metal furnace lined with fire brick. It is so constructed that coal, gas or oil may be used as fuel.

As built for extruding lead pipe the solid metal is forced upward from the lead pot through a die held in the hollow lead extrusion ram and the pipe comes out through the center of the cross-head and is led over the delivery wheel to the cooling drums as illustrated.



Robertson Lead Extrusion Press

When applied to covering rubber garden hose the delivery is at the base of the press through a special die which provides for passage horizontally of the hose, inflated with air pressure, and the extrusion around it of a shell or tube of lead.—John Robertson Co., 121-137 Water street, Brooklyn, N. Y.

#### Wire Brush Buffers

In the manufacture of tires, inner tube buffing is an essential element in the preparation of stock, and the cleaning of molds, cores and mandrels.

Hand methods with abrasive papers, files or rasps have been abandoned in place of the more effective circular wire brushes, one of which is here pictured. This form is made in various sizes from steel wire of gages suited to special service requirements. The tufts or strands of wire are placed individually in holes accurately spaced around the outer edge of a steel disk allowing free movement or abrading effect in any direction. This freedom of movement permits the use of special wire and allows great operating and increase of production.



Ridgely Circular Brush

In order to eliminate excessive wear on equipment perfect balance is essential. This is obtained by making the brush disk from gaged steel, perfectly centered with the outside holes drilled, reamed and countersunk. Each of the equally spaced holes are filled with the same number of wires of equal length

which insures perfect balance for operating on a high speed buffer.

For cleaning mold cavities, and flat surfaces cup-form brushes are used. These are mounted on high speed electric pneumatic portable grinder or flexible shaft and are specially adapted for cleaning molds after the scale has been loosened by burning.—The Wire Brush Co., Springfield, Ohio.

#### Improved Tire Wrapping Machine

The tire paper wrapping machine here illustrated embodies improvements of special interest and value. For example liquid glue is carried in a hollow shuttle and is applied to the edge of the paper wrapping strip as it passes over a small hole in an angle stud mounted upon the shuttle. Another new feature relates to the bead closing device. It permits the beads to open or separate automatically when the machine is stopped but is so arranged that their closing is not automatic. Thus the operator is enabled to close the beads to any desired degree on various tires. A printing mechanism is mounted on top of the machine. It operates by rotation of the wrapped tire and prints from an inked type wheel marking tread with the tire size and manufacturer's name.



Pierce Tire Wrapper

Neither gluing nor printing delays the work of wrapping and the normal production with a single operator is 3 to 4 tires per minute. Complete control of the machine is effected by hand or foot operation of a lever.—Pierce Wrapping Machine Co., 625 West Jackson Boulevard, Chicago, Illinois.

#### Biggs Water Cure Heater

The Biggs Boiler Works Co., Akron, Ohio, announces an improved jacketed vulcanizer for service with the Laursen process. Constructed without the use of stay-bolts, the shell is arranged so that the inner shell can expand without relation to the outer shell. Due to the fact that water is used in the Laursen process of vulcanizing tubes, it is necessary to keep this medium under pressure at all times, otherwise there would be a violent evaporation, attended by cooling of water and loss of heat. This requires a vulcanizer of rugged construction and capable of standing great temperature changes, which need, it is claimed, the Biggs vulcanizer supplies.

#### Paper Slitter and Rewinder

Footwear and other rubber manufacturers who make their own paper boxes or cartons will be interested in this new type of paper slitter and rewinder. This machine cuts strips one half inch wide and up. It is made in two sizes, 28 and 34 inches wide. It is of the circular shear variety, strongly built and simple, easy and fast in operation.—Inman Manufacturing Co., Amsterdam, N. Y.

## Machinery Patents

## The United States

**1,587,540. STOCK RACK.** This invention provides a convenient means for storage of rolls of sheet rubber and rubberized rolls that protect the goods from damage and insures that the stock earliest placed in the rack is removed for use before the stock placed later. Thus the loss and inconvenience due to differences in aging of stocks as ordinarily found are entirely avoided. The principle of construction is a rack in the form of a series of inclined rails with receiving racks at each end. The rolls of stock mounted on arbors with a roller at each end are racked on the inclined rails at the upper end and pass down by gravity as they are removed for use at the lower end.—Charles E. Maynard, Northampton, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

**1,587,543. TREATMENT OF RUBBER ARTICLES.** This invention relates to improvements in methods of vulcanizing pneumatic tire casings by means of which heat is applied to the inside of a tire casing while leaving the outside of the casing exposed to an unheated fluid such as compressed air. This fluid pressure will prevent blowing due to entrapped gases in the rubber cover on the outside of the casing. The special molds and vulcanizer employed are fitted with a set of toggle-wedge units which operate to separate the halves of each mold during a preliminary cure applied through the hollow core upon which the tire casing is mounted. Full pressure of the molds upon the casing is made by the upward movement of the hydraulic plunger which withdraws the wedges from their operative positions and forces the pile of molds against the cover. The heating of the casings is then continued by steam admitted to the cores and the inside of the heater.—Thomas Midgley, Hampden, and Ralph B. Naylor, Springfield, assignors to The Fisk Rubber Co., Chicopee Falls, all in Massachusetts.

**1,587,577. TIRE MOLD.** This mold is designed for the manufacture of cellular cushion tires without trapping air in the formation of the cellular openings. This is accomplished by making the hole-molding pins which enter the tire from each side so that they will not contact end to end when the halves of the mold are completely closed together but have a clearance of about one thirty-second of an inch. Further the ends of the mold pins are drilled to receive the excess rubber and trapped air. Circulation grooves in the mold adjacent to the mold pins are also provided to lead away trapped air. By these means air pockets in the vulcanized tire are practically eliminated.—William J. Beitel, assignor to Lambert Tire & Rubber Co., both of Barborton, Ohio.

**1,588,585. APPARATUS FOR BUILDING CORD TIRES.** One of the principal objects of this invention is the production of drum built cord tires with their central portion stretched circumferentially and centrally of their edges, but not otherwise, giving them the desired tire form. The apparatus comprises a stock table with an adjustable feed rack at one end next to a specially constructed building drum. The drum has a circumferential recess located centrally between its edges for the reception of an inner tube to expand the band built fabric. This inner tube or air bag is reinforced with a covering of cord fabric with cords extending across the tube so that it can elongate circumferentially but cannot increase in size in a horizontal direction. The cord plies are run onto the building drum from the rack at the end of the table and are automatically rolled to place and all air expelled by rubber rollers. The machine operates rapidly, one skilled operator being able to build 40 to 50 carcasses in one day.—John Kearns and Ezra G. Webber, assignors of one half to Lee Tire & Rubber Co., all of Conshohocken, Pennsylvania.

**1,588,593 and 1,588,594. MACHINE FOR LOADING RUBBER HEEL BLANKS WITH WASHERS.** This invention eliminates the work by the pressman of placing nailing washers on the mold pins of a heel mold. This it does by automatically embedding in the uncured heel blank so that they will register with the mold pins ready for curing. The machine comprises a loading mechanism including upper and lower dies with a series of plungers guided in the upper die and acting to force a set of washers simultaneously into a heel blank supported on the lower die; a blank feeding mechanism which presents the heel blanks singly to the loading mechanism, and a washer feeding device which delivers washers to the loading mechanism in position to be forced into the heel blanks as a full set. Different sizes and styles of heels have a different number and arrangement of washers. Consequently it is necessary to use different dies for different heels and the machine includes provision for readily changing the dies.—Victor R. Lawson, Roslindale, and John J. Batterman, Dedham; said Batterman assignor to John J. Daly, Newton, all in Massachusetts.

**1,588,979. HEATER.** This is a new type of vulcanizer comprising a cylinder in the bottom part of which is a full size hollow piston making a steam tight connection with the cylinder by means of packing. To reduce radiation the piston is filled with asbestos. A special conduit enters the cylinder through a channel at the top of shell and its free end rests on the piston from which it serves to carry away the condensations.—George J. Meade and George L. Mather, Milwaukee, Wisconsin, assignors by mesne assignments, to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

**1,589,711. PAINTING MACHINE.** This invention provides a mechanical means for painting golf balls which assures a smooth coating and preserves the original balanced condition of the ball. The device is arranged to grip a number of balls individually raising them from a tray which is then removed by the operator and the balls are automatically lowered into individual cans of paint, again raised and rotated to spread the paint evenly over the surface and throw off the surplus. Continued rotation dries the surface of the balls and gives the paint an initial set. They are then deposited from the mechanical grippers upon trays for final drying.—Gabriel Martinez, assignor by mesne assignments to Gabriel Machine Co., Inc., both in New York, N. Y.

**1,589,890. STRETCHING APPARATUS.** This machine is designed to stretch to tension the bias cut fabric for building pneumatic tires. This is accomplished by drawing it over a crown roll against the resistance of a brake band acting on a drum mounted on a power connected shaft. Provision is made for varying this tension as desired.—George L. Mather, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

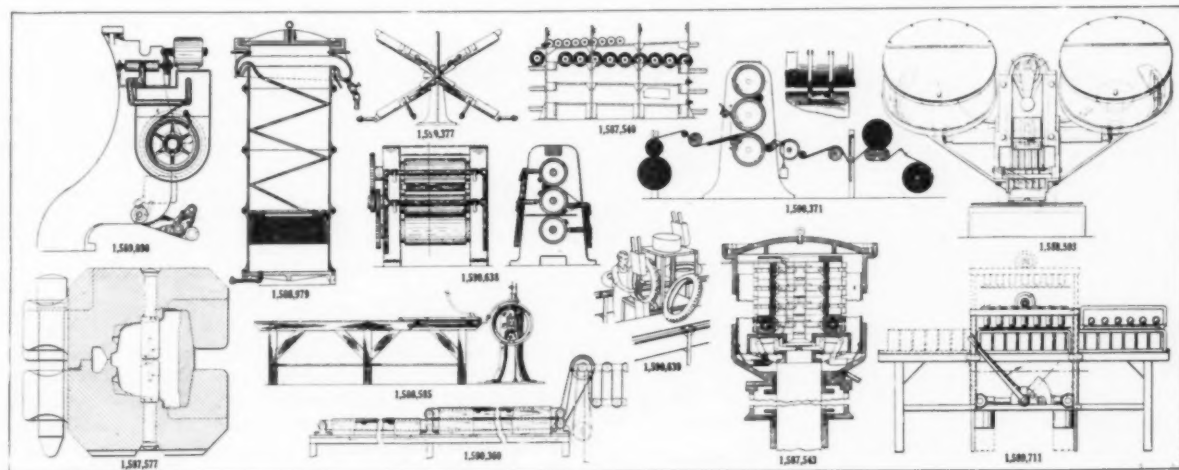
**1,590,360. APPARATUS FOR ASSEMBLING SHEET MATERIAL.** The object of this apparatus is to assemble bias-cut strips of rubberized building fabric into suitable lengths to be drawn onto a form or core in the construction of pneumatic tires. Two boxed endless belt conveyers run one above the other. The upper one is half the length of the lower one and where it terminates their surfaces run close to each other. The belts are driven through gearing operated in connection with a festooning rack for the assembled material. In operation cuts of fabric are spliced on the top face of the short belt and also on that of the long belt. The belts move these two strips of fabric, come in contact and unite together between the top reach of the bottom long belt and the lower reach of the upper short one. Thus assembled they pass on to the festooning rack.—John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

**1,590,371. APPARATUS FOR EDGING FABRIC STRIPS WITH RUBBER.** This is accomplished without the use of folding guides by progressively applying one marginal portion of rubber ribbon under tension to an edge portion of fabric and utilizing the tension of the rubber to fold the other margin of the ribbon around the edge of the fabric. The ribbons are cut on a calender as sheeted and applied to each edge of bias cut fabric strip as it is fed between the bottom and middle rolls of the calender. The rubber is under greater tension than the fabric. On the opposite side of the calender the deflection of the strip around an idler roll causes the free edges of the tensioned rubber ribbons to draw over the edges of the idler roll onto the opposite side of the fabric. In this position the ribbon fold is completed as it passes beneath the next roll.—Urban Haren, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

**1,590,377. TIRE VULCANIZING MOLD.** This is a swing or hinged steam-jacketed tire mold. The molds are arranged in pairs either side of a vertical axis or support. The mold sections separate by a vertical hinge movement. In operation, the molds being open, the tires on cores, air bags or curing rings are laid in the cavities. The mold sections are then closed and clamped together for curing.—Frank L. Johnson, Akron, Ohio.

**1,590,638. CONTROLLING THE TEMPERATURE OF RUBBER WORKING ROLLS.** This is a method of quick surface temperature control by the use of a spray of water against the roll surfaces before they come into contact with the rubber. The body of the roll is kept at a temperature slightly higher than that desired on its surface. The relatively high working temperature of the rolls evaporates the water so rapidly that the rubber is not wet.—M. A. Marquette, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts.

**1,590,639. APPARATUS FOR USE IN INSPECTING TIRES.** This is a system of belt conveyers moving a continuous line of tire casings for the successive operations of inspecting, stenciling and wrapping. The line of casings after passing through the first side inspection may be automatically tipped into position so the second side may be inspected and automatically tipped from a slanting position on one conveyor to a horizontal position on a second one for convenience of the work in progress.—Edward H. Marsh, Jr., Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.



- 1,588,040 Pump. Edmund L. Moore, Medford, Massachusetts.  
 1,588,100 Apparatus for rerubbing pneumatic tires. Arnaud Eymael and Michel A. Dall-Este, Brussels, Belgium.  
 1,588,342 Buffer. Horace D. Stevens and Edward D. Putt, assignors to The Firestone Tire & Rubber Co., all of Akron, Ohio.  
 1,588,343 Tire tester. William C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.  
 1,588,668 Vulcanizing apparatus. Walter L. Fairchild, New York, N. Y.  
 1,589,189 Circular loom. Evarts G. Loomis, Newark, assignor to The Okonite Co., Passaic, both in New Jersey.  
 1,589,274 Tire spreading device. George H. Wadsworth, assignor to The Wadsworth Core Machine & Equipment Co., both of Akron, Ohio.  
 1,589,816 Control mechanism for tire wrapping machine. Paul Pierce, Chicago, Illinois.  
 1,589,839 Golf ball washing apparatus. James R. Conklin, Pittsburg, Kansas.  
 1,589,952 Vulcanizing apparatus. Wade H. Foster, Bad Axe, Michigan.  
 1,590,138 Battery jar mandrel. James H. Wagenhorst, Akron, Ohio.  
 1,590,168 Pneumatic tire apparatus. Otto J. Kuhlke, assignor to The Kuhlke Machine Co., both of Akron, Ohio.  
 1,590,212 Device for removing pneumatic tires from rims. Joseph B. Smith, Havana, assignor to Weaver Manufacturing Co., Springfield, both in Illinois.  
 1,590,768 Mold for hollow articles. Jeremiah L. Mahoney, New Haven, assignor to The Canfield Rubber Co., Bridgeport, both in Connecticut.  
 1,591,624 Abrading machine. James F. Hennessy, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.  
 1,591,701 Air bag puller. Charles H. Desautels, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.  
 1,591,736 Wrapping machine for cables. Charles James Beaver, Hale, and Ernest Alexander Claremont, Dunham Massey, assignors to W. T. Glover & Co., Ltd., Manchester, all in England.

#### Reissue

- 16,379 Tire making apparatus. Allan B. Merrill, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. Filed December 13, 1923. Serial No. 680,541. Original No. 1,435,970, dated November 21, 1922, Serial No. 513,319, filed November 7, 1921.

#### The Dominion of Canada

- 261,551 Tire machine. The Fisk Rubber Co., Chicopee Falls, Massachusetts, assignor of George F. Winkle, Milwaukee, Wisconsin, both in U. S. A.  
 261,772 Pulverizer. The B. F. Goodrich Co., New York, N. Y., assignee of John Rudolph Gammeter, Akron, Ohio, both in U. S. A.  
 261,976 Hinge joint. The Dunlop Tire & Rubber Goods Co., Ltd., assignee of Leonard V. Dixon, both of Toronto, Ontario.  
 262,166 Tire machine. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of Adrian Oren Abbott, Jr., Detroit, Michigan, U. S. A.  
 262,195 Tire band expander. The Lambert Tire & Rubber Co., Barberton, assignee of Mark A. Replogle, Akron, both in Ohio, U. S. A.  
 262,302 Tire mold. Arthur Reid Colvin, Trenton, New Jersey, U. S. A.

#### The United Kingdom

- 250,253\* Machine for heel and toplifts. United Shoe Machinery Corporation, 205 Lincoln street, Boston, assignee of J. F. Standish, 18, Tewksbury street, Winthrop, both in Massachusetts, U. S. A.  
 250,321 Roll bearing for rubber working machines. A. Fraser and Rissik, Fraser & Co., Ltd., Factory Lane, Croydon, Surrey, and F. Shaw & Co., Ltd., Corbett Street Ironworks, Bradford.  
 250,334 Rolling machine. Greenwood & Batley, Ltd., Albion Works, Armley road, Leeds, and J. H. Barker, 15, York road, Harrogate, Yorkshire.  
 250,408 Sole laying press. T. E. Cann, 18, Applegate street, Leicester.  
 250,622\* Apparatus for producing patterns in outer surface of tires. A. Benaglia, 60, Via A. Saffi, Bologna, Italy.  
 250,657 Machine for covering elastic wire. J. F. Benson, 36A Granby street, H. Windram, 9, Victoria road east, and J. W. Loweth, 27, Coral street, all in Leicester.  
 250,978\* Machine for making tire covers. H. Debor, 55A, Zielstattstrasse, Munich, Germany.  
 251,088 Platen machine. J. Thompson, 3, South View, Milngavie, Dumbartonshire.  
 251,232\* Tire vulcanizer. Kuhlke Machine Co., Water street, assignor of O. J. Kuhlke, 166, Casterton avenue, both in Akron, Ohio, U. S. A.

\* Not yet accepted.

#### New Zealand

- 55,942 Tire mold. Pierre Louis Menjou, 4 Rue Doudeauville, Paris, France.  
 56,021 Tire vulcanizing appliance. Alfred Edward Burch, 101 Queen street, Melbourne, Victoria.

#### Germany

- 430,792 (June 26, 1925). Kneading machine. Fritz Kempter, Heinestrasse 10, Stuttgart.

### Process Patents

#### The United States

- 1,587,742 Rubber coated metal. Edward S. Avery, East Hampton, New York.  
 1,588,008 Forming cushion tires. Richard S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.  
 1,588,114 Manufacturing cushion tires. Frederick E. Kempel and Carl E. Rett, Akron, assignor to Lambert Tire & Rubber Co., Barberton, both in Ohio.  
 1,588,278 Producing replicas of textile samples. Bernard F. Stenz, New York, N. Y.  
 1,588,797 Manufacturing rubber sheets. Tod J. Mell, Akron, Ohio.  
 1,589,083 Making a denture. Charles Lee Alexander, Charlotte, North Carolina.  
 1,589,195 Shoemaking. Willie B. May, Bridgewater, Massachusetts.  
 1,590,347 Making heels. Joseph Edwin Markham Cooke, Stafford, England.  
 1,591,018 Cork rubber composition for shoe soles. David A. Cutler, Wollaston, assignor to Alfred Hale Rubber Co., Atlantic, both in Massachusetts.  
 1,591,303 Manufacturing driving belts. Abraham L. Freedlander, assignor, by direct and mesne assignments, of three-fourths to The Dayton Rubber Manufacturing Co., both of Dayton, Ohio.  
 1,591,816 Repairing pneumatic tire casings. Paul E. Hawkinson, assignor to Ke Hawke Manufacturing Co., both of Minneapolis, Minnesota.  
 1,591,882 Method of embossing. John T. A. Paddenburg, Brooklyn, assignor to The John C. Powers Co., Inc., New York, both in New York.

#### The Dominion of Canada

- 262,412 Applying rubber washers to valves. The Dill Manufacturing Co., assignee of Adelbert E. Bronson, both of Cleveland, Ohio, U. S. A.

#### The United Kingdom

- 250,625 Road marking. A. Comrie, 20, Bernard street, Southampton.

#### New Zealand

- 56,129 Molding elastic masses. D. Gestner, Ltd., Neo-Cyclostyle Works, Tottenham Hale, assignee of George Charles Henry Miller, 42 The Broadway, Lower Edmonton, both in London N. 17, England.

### Design

#### Germany

- 950,077 (December 8, 1925). Device for mounting rubber threads. Käseberg & Co., Barmen-Nächstebreck.

### ELECTRIC RUBBER CUTTING TOOL

Cutting rubber with a red hot knife is unusual and unique. An electric hand tool for this purpose, however, has been designed and is used for such work as trimming sheet rubber to size and shape of a metal pattern and possibly for cutting the tread rubber from the rims of solid tires. The tool is provided with a handle supporting the cutting part which has the form of a thin blade of electric resistance metal designed to be heated by the passage of electric current supplied by conductors passing through the handle of the tool. The current is taken from a lamp socket or similar outlet and the heat of the blade is controlled by a rheostat. In use the blade is heated to cherry red by the electric current, one side of the knife is pressed against the edge or side of the rubber to be cut whereupon it quickly penetrates and passes through the rubber. This action is facilitated by a back and forth movement of the blade during the cutting as by this means the temperature of the blade is maintained uniform throughout its length. The melting of the rubber as the blade passes into it serves as a lubricant and hastens the cutting operation.

### AKRON-STANDARD POWER TYPE VULCANIZER

Rubber manufacturers are placing many orders for the new improved Akron Standard power type, self locking vulcanizer, according to A. J. Fleiter, general manager of the Akron Standard Mold Co., of Akron. A feature of this tire vulcanizer allows curing rings to be an integral part of the vulcanizer, thus doing away with costly ring replacement and the laborious rimming up process.

## New Goods and Specialties

### Golf Oxford Shoe

THE oxford illustrated is a parchment shade of tan with rich calf trimmings and has a heavy rubber sole with indentations to prevent slipping. The shoe is made with spring heel, a style most popular with all sportsmen. The manufacturer of this footwear is The Florsheim Shoe Co., Adams, Clinton, Jefferson and Quincy streets, Chicago, Illinois.



Sport Shoe

### Lewis Shock Eraser

This shock absorbing device is now manufactured by the Columbia Tire Corporation, Portland, Oregon, and has proven to be of outstanding merit after three years of exhaustive laboratory and actual field tests, on hundreds of automobiles, under varying conditions of road and climate in the west.

### Folding Boat

The Whall folding row or motor boat is a real boat in every way: sturdy, strong and practical and may be impelled with paddle, oars or motor power. The frame is of ash securely fastened together, the sides and bottom of sectional lattice work held rigidly in place by clamps, providing a smooth and even surface difficult to recognize as a folding boat. The air filled rubber sponsons prevent capsizing or sinking, insuring perfect safety. The manufacturer of this boat is the Metropolitan Camp Goods Co., Athol, Massachusetts.



Whall's Boat

### Swimming Belt

The Airo-Flote is a light weight belt which insures safety without interfering with the movements of the swimmer, and may be worn either under or over the bathing suit. It is made of two-colored rubberized fabric with unbreakable, vulcanized joints and a non-rusting buckle which straps it on securely. These belts may be procured for both adults and children.—The Airubber Corporation, Kingsbury and Superior streets, Chicago, Illinois.



Airo-Flote

### Toy Balloons for Sesquicentennial

A special balloon in honor of the Sesquicentennial is being made up by The Oak Rubber Co., Ravenna, Ohio. This balloon is printed with the Liberty Bell on one side and Independence Hall on the other. The special celebrations held in so many towns for the Fourth of July have stimulated patriotic interest and created a large demand for this type of balloon.

### Rubbered Cover for Truck Bodies

A quickly and easily applied rubbered fabric truck cover has recently been perfected. It is designed to extend across the open top of a box truck for the protection from the weather of articles being transported. A line of grommets extends around the heavily reinforced edges of the cover. These engage with corresponding spring snap-hooks attached near the outside top edges of the truck body and serve to draw the cover down over the edge and exclude moisture from the interior of the truck.—John Straub, Ashley, North Dakota.

### Bathing Novelties

For bathing articles rubber seems to have superseded most other fabrics. The I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y., has introduced many new specialties this season, among which is the rubber bandeau here pictured. This bandeau is to be worn under the bathing cap and will keep the hair dry even after the most strenuous dives and longest swims. Another novelty, made by the same manufacturer, is a bathing brassiere of rubberized stockinet.



Rubber Bandeau

### Rubber Swimming Device

The amateur or experienced swimmer will be interested in this new device, the "Human Duck," which prevents the swallowing of water and consequent choking for air. It consists of an



"Human Duck"

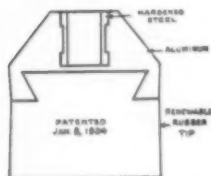
ordinary bathing cap equipped with a tube which admits and expels air through light weight tanks encircling the waist of the wearer. It is quickly and easily donned by slipping on the cap, fastening the air tanks about the waist and placing the mouthpiece between the lips. Exhaled air passes through the exit chambers and buoys the swimmer, a feature especially beneficial to those just learning to swim. However, the tanks may be left off if preferred. A floating inlet of air may be used, as shown in the illustration, this allowing diving and swimming under water for an indefinite period.—S. R. Brygider, 116 East 11th street, New York, N. Y.

### Rubber in the Foundry

The Salinger patented rubber rammer butt is made in three styles: one  $2\frac{3}{4}$  inches in diameter suitable for the general run of work; another style, used for car wheels or flasks that have bars close together, is made with a long tapered shank and is  $2\frac{3}{8}$  inches in diameter; the third, necessary for very close work, is a peen rammer with long tapered shank and rubber tip,  $\frac{3}{8}$  inches wide and  $2\frac{3}{4}$  inches long.

Salinger Rammer Butt

The rubber tips on these rammer butts are pressed, not cast in, and so constructed that they will not work loose. The tips when worn can be easily and quickly replaced.—Laclede Brass Works, 307 Cedar street, St. Louis, Missouri.



### Improved Respirator

An improved model of the aluminum respirator manufactured by the Pulmosan Safety Equipment Corporation, 386 Jay street, Brooklyn, New York, is here illustrated. The aluminum shell is equipped with a special molded face cushion which conforms to the shape of the face so that goggles may be worn. This device is very light and sanitary and easily taken apart for cleaning. Workmen supplied with the respirator are assured protection against dust, paint spraying and smoke fumes.



Pulmosan Respirator

### Safety Handles

The C & E safety handles for extension lights are planned for convenience, economy and safety. They are made of high grade rubber, and, because of their flexibility, they afford not only a perfect grip for the operator, but prevent the cord from chafing and breaking at the handle. They are adaptable to any make of socket—key or keyless. The safety handles practically eliminate the difficulties usually encountered in maintaining the connection between the cord and the socket, the resulting saving in time being quite an item in machine shops, garages, mines, etc., where high priced labor is employed.



C & E Safety Handle

These handles are also manufactured for portable electric tools and electric irons, as well as special applications.—The Ericson Manufacturing Co., 1987 East 105th street, Cleveland, Ohio.

### Linotype Keyboard Rolls

The master types of linotype machines are handled at the keyboard by the aid of small rubber covered rolls of 16-inch face. The roll center is a steel shaft and the cover is special quality tubing about  $11/16$  of an inch inside diameter and  $1/8$ -inch wall with fine corrugated surface. When slipped over the steel center the outside diameter of the rubber cover is required to be exact to a specified diameter and the corrugations to run perfectly straight. These conditions are being successfully met by the

Keruco standard roll, a white rubber tubing machine product of fine quality and workmanship.—Keystone Rubber Co., 176 North Market street, Chicago, Illinois.

### Broom with Rubber Head

The head of the Gemco broom is covered with rubber which prevents the marring of furniture when accidentally hit by the broom. The fine, firm, silk-like fibers of the broom pick up all fine particles

that the ordinary broom will not touch. It is built to last; water, oil, acid or sweeping compounds cannot harm the specially treated flexible fibers, each one of which is looped and held firmly in position by a special oval anchor leaving no ends to pull out or break off. The construction and quality of the material used gives the Gemco an easy sweeping action which reduces the actual time of sweeping, more floor space can be covered and a better and cleaner job done with less effort and cost.—Gemco Manufacturing Co., 742 South Pierce street, Milwaukee, Wisconsin.



Gemco Looped Fiber Broom

### Rubber Table Mat

In these days of highly polished tables, the mat is a necessity and the Dellex solves the problem of providing one which is both ornamental and hygienic as well as serviceable. Made by the Peachey process, the rubber has an outer covering of knitted material which may be obtained in different colors, matching the highly colored china so much the vogue at present. The manu-



Dellex Mat

facturers of this article are the Peachey Textiles, Ltd., 83 Pall Mall, London, S. W. 1, England, represented in the United States by The Grasselli Chemical Co., 347 Madison avenue, New York, N. Y.

### Asphalt Battery Case

Radio and low-priced automobiles have created a demand for an inexpensive yet efficient battery. The latest type of one-piece box is manufactured from asphalt, pressed out mechanically with-

out vulcanization and has proved a good substitute for the hard-rubber box.

The composition is softened to a lough in ovens adjacent to the presses, placed in the mold, and the press closed, thereby exerting pressure on all sides. A cold water jacket hardens the composition and sets the material under pressure. This process eliminates the expensive processes of mixing, calendering, and vulcanizing.



Richardson Battery Case

Advantages of this construction are that there are no joints or seams to open; no jars to crack; the composition is acid proof; and a non-conductor of electricity. Furthermore it is not subject to distortion or deflection as in the case of wood or rubber composition boxes.

This type of battery has been so successful that many rubber companies have added units for its manufacture to complete their line of batteries.—The Richardson Co., Lockland (Cincinnati), Ohio.

### Rubberized Reducing Shirt

The athlete who finds it necessary to train in order to bring his weight down to required measurements will find this rubberized shirt ideal for his purpose. The garment is guaranteed to be

positively rain and windproof, thus affording ample protection against cold and wet. The shirt is made of 6-ounce wool flannel and is vulcanized with rubber on the inside. The manufacturer of this article is the Charles C. Carr Co., 968 Fort Wayne avenue, Indianapolis, Indiana.



Training Shirt

### Garden Hose

The Home Rubber Co., Trenton, New Jersey, has a complete line of hose for the garden and lawn, among the heavier quality a five year guarantee is given. Several new brands have been added to their regular list, and, if desired, a red cover will be furnished on any brand.

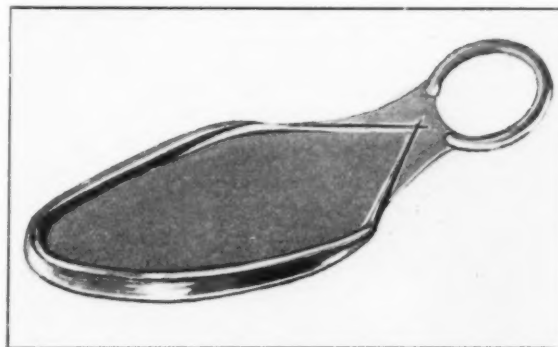
### Nevawet Baby Diapers

The Nevawet diapers can be washed in either cold or warm water. They are chillproof, waterproof, absorbent and non-irritable. There is no elastic to bind the baby or interfere with the proper

circulation of the blood. These diapers are especially adapted for baby's comfort during the night, as they absorb moisture and keep out all drafts, this last being of particular importance as children so often kick off the covers. They are made either in square or triangular shape with cut-outs for the legs.—Nevawet Products Corporation, 28-30 West 25th Street, New York, N. Y.

### Elastic Sole

A new elastic sole adapted to both men and women's shoes has recently been patented by John L. G. Dykes, 434 Roscoe street, Chicago, Illinois. The sole is to be worn as an overshoe and is



Dykes' Rubber Sole

made in three sizes only which fit any shoe. A particularly new feature is the eight on the heel which tends to hold the rubber securely in place and prevents it slipping on the heel of the shoe. The soles are light in weight and may easily be carried in the pocket or vanity case.

### Tweed Gaiters

One of the newest and smartest developments in waterproof footwear for women is the Radcliffe gaiter just marketed by the United States Rubber Co., 1790 Broadway, New York, N. Y. These gaiters are made with imported tweed uppers which fit neatly over the ankles with cuff, foxing and lining to match. They may be obtained in tan or gray, and being equipped with a perfected automatic fastener, can be slipped on or off in a second.



Radcliffe Gaiter

### Two Piece Teat Cup

A new two piece teat cup has been perfected by the Perfection Manufacturing Co., 2125 East Hennepin avenue, Minneapolis, Minnesota, which makes the cleaning much easier. The inflation of the cup and the tube connecting it to the claw are molded in one piece, with ribs molded on the inflation in a spiral so that the air as it is admitted through the little tube to the top of the teat cup shell produces a downward massage on the teat. The flexible rubber opening in the top of the inflation makes it feel easy and comfortable to the cow yet stays on until the vacuum is shut off.

## Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
832	Source of supply for rubber heel nails.
833	Manufacturer of rubber novelties.
834	Makers of unbranded tires and tubes.
835	Manufacturers of refiners.
836	Machinery for pulling tire treads and fabric from old tires.
837	Small twenty gallon rubber cement mixer, motor driven.
838	Foreign dealers in sandals made from old tires.
839	Automatic cutting machine for punching out heel blanks.
840	Stands for displaying tires in show windows.
841	Manufacturers or miners of Tripoli flour.
842	Manufacturers of ribbed rubber nitro can boots.
843	Atomizer bulb valves.
844	Manufacturers of belt making machinery.
845	Manufacturer of hard rubber varnish.
846	Makers of organic colors.
847	Manufacturer in United States of jet black iron oxide.
848	Source of supply for uncured or semi-cured rubber dough.
849	Firms dealing in sugar cane wax.
850	Manufacturer of hydrometer red rubber bulbs and nipples with small rubber plug.
851	Manufacturers of carbon tetrachloride.
852	Transfer paper suitable for imprinting inner tubes.
853	Source of supply for Cerate.
854	Manufacturer of Userite.
855	Hand operated sheet rubber cutter.

## Foreign Trade Opportunities

For further information concerning the inquiries listed below, address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
20,919	Sweden. Rubber belting and tubing.....	Agency
20,952	England. Rubber boots and shoes.....	Purchase and agency
20,953	Norway. Rubber boots and shoes.....	Purchase and agency
20,954	Germany. Rubber boots and shoes.....	Purchase and agency
20,955	Germany. Crêpe rubber soles.....	Agency
20,956	Norway. Rubber overshoes for men, women children.....	Agency
20,967	Australia. Automobile tires.....	Purchase and agency
21,006	Italy. Motor cycle tires.....	Purchase and agency
21,047	Denmark. Rubber goods.....	Agency
21,090	Germany. Colored rubber balls, 2-inch size.....	Purchase
21,091	Germany. Automobile and bicycle tires and inner tubes.....	Purchase
21,092	New Brunswick. Rubber novelties.....	Agency
21,094	Germany. Rubber brushes.....	Purchase and agency
21,097	Germany. Seamless hot water bottles.....	Purchase
21,104	Salvador. Golf balls.....	Purchase and agency
21,126	Uruguay. Rubberized goods such as baby articles.....	Purchase
21,160	Germany. Sanitary and surgical rubber goods.....	Purchase
21,161	Germany. Used tires and tubes.....	Purchase
21,162	Latvia. Automobile tires.....	Agency
21,163	Germany. Rubber balls and tops.....	Agency
21,164	Bolivia. Sanitary and surgical rubber goods.....	Agency
21,178	Egypt. Mechanical rubber goods, specialties and novelties.....	Agency
21,230	India. Mechanical rubber supplies.....	Purchase and agency

AMERICAN TIRE EXPORTS TO NEW ZEALAND ARE SHOWING A considerable decline, as compared with the past year, as the following figures indicate: exports of casings (April, 1926), 1,112, value \$21,184; (April, 1925), 7,509, value \$91,064. Corresponding exports of solid tires numbered in April, 1926, 374, value \$20,123; as against the April, 1925, figure of 683, value \$29,479. Values for inner tubes were \$3,904 and \$9,816 for April, 1926, and April, 1925, respectively.

## Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
*1188....	"May Imports of Rubber Tires Into the United States."
1189....	"Comparative Tire Exports from United States, Canada, United Kingdom, France, Italy, and Germany During First Three Months of 1926."
1190....	"Tire Exporters' Weekly News Letter."
*1192....	"French Tire Exports During Month of April, 1926."
1193....	"Crude Rubber News Letter."
*1195....	"Canadian Tire Exports During May, 1926."
1197....	"Tire Exporters' Weekly News Letter."
*1198....	"Dutch Syndicate Formed to Operate Mills for Conditioning Native Rubber in Dutch East Indies."
*1199....	"Automobile Tire Trade in Northern Sumatra During First Quarter of 1926."
1200....	"Crude Rubber News Letter."
1201....	"Trade Notes on Rubber Specialties."
1203....	"Tire Exporters' Weekly News Letter."
*1204....	"Rubber Production in French Africa."
1205....	"Rubber Specialties Weekly News Letter."
*1206....	"British Exports of Automobile Casings During May, 1926."
1208....	"Crude Rubber News Letter."
*1210....	"French Tire Exports During Month of May, 1926."
1212....	"Tire Exporters' Weekly News Letter."
*1213....	"Malayan Rubber Prices, Exports and Imports, 1924 and 1925."
1214....	"Rubber Footwear Exporters' Monthly News Letter."
1216....	"Crude Rubber News Letter."

## Exports of Rubber Goods Continue Heavy

April exports of rubber goods from the United States reached a value of \$5,604,376, a figure only slightly below that for March, the record month of the past four years. Chief reasons for this large total may be found in the continued high unit values for exports of automobile casings and solid tires, record volume business in rubber hose, heels and soles, rubber and friction tape, erasers, rubber bands, rubber gloves, and a heavier than average trade in canvas rubber-soled shoes and reclaimed rubber.

Detailed figures for automobile casings show a slight gain in number over those of March, 134,843 and 129,232 respectively, the April shipment being the heaviest of the year. The total value, however, at \$2,450,083, with an average value of \$18.17 per casing, represented a slight falling off from the March figures. There were 113,415 inner tubes exported in April, value \$309,090, the largest export of this item for the year, although the unit value for the period was the lowest. Unit values, however, of solid tires reached the highest figure on record, \$40.31 per tire as against \$30.47 in March.

April shipments of canvas rubber-soled shoes totaled 530,412 pairs, value \$421,923, the largest shipments registered thus far for 1926. There was a normal decline in exports of waterproof footwear, while shipments of rubber heels and soles totaled 418,343 pounds, value \$124,549. The April exports of 674,344 pounds of rubber hose, value \$281,848, surpassed the March record figure of 636,054 pounds, while the average value for the month of rubber belting, \$0.708 per pound, represented the highest figure for this class of goods in either 1925 or 1926, with the single exception of last November, when the average was \$0.726 per pound. Shipments of rubber packing totaled 176,212 pounds, value \$92,283.

Other April exports that were unusually heavy included the following: Rubber and friction tape, 111,313 pounds, value \$34,235; rubber bands and erasers, 65,619 pounds, value \$50,444; and rubber gloves, 8,671 pairs, value \$27,361. April shipments of reclaimed rubber, 1,023,174 pounds, value \$115,114, have been surpassed only by the record figure of October, 1925, of 1,167,574 pounds. Exports in April of waterproof automobile cloth totaled 212,633 square yards, value \$118,402. Shipments of electrical hard rubber goods were the highest of the year, 97,804 pounds, value \$32,215.—Commerce Reports.

# The Editor's Book Table

## Book Reviews

"LES CAOUTCHOUCS FACTICES OU HUILES VULCANISEES." By A. Dubosc. Published by A. D. Cillard, 49, Rue des Vinaigriers, Paris, France.

THIS is a study of rubber factices or vulcanized oils. Chapter 1 is devoted to generalities. Chapter 2 covers the basic oils, including their constants and characteristics. Chapter 3 reviews the raw sulphide materials: sulphur, chloride of sulphur, hydro-sulphuric acid, sulphurous acid. The succeeding Chapters 4, 5 and 6 are devoted to the detailed description of various factices: white factices (kettle and pan processes), brown factices, miscellaneous factices (mixed, nitric, camphorated, amine factices, etc.). The work concludes with a study on the use of factices (Chapter 7) and by analyses of the factices (Chapter 8). This last chapter gives the methods in use for various proportions and a number of important analysis types.

This work is indispensable for manufacturers, engineers and chemists interested in oils, factices and rubber.

"MEN AND RUBBER—THE STORY OF BUSINESS." By Harvey S. Firestone, in collaboration with Samuel Crowther. Published by Doubleday, Page & Co., Garden City, New York. Cloth, illustrated, 272 pages, 6½ by 10 inches.

In easy, conversational style Mr. Firestone tells in this volume the story of his business life, while his optimism, plain common sense, and ability to see the humorous side of things are in evidence in every chapter. The book will be of interest to every rubber manufacturer and to others who wish to know the history of the building up of an important rubber organization.

"AUTOMOTIVE GIANTS OF AMERICA—MEN WHO ARE MAKING OUR MOTOR INDUSTRY." By B. C. Forbes and O. D. Foster. Published by B. C. Forbes Publishing Co., 120 Fifth avenue, New York, N. Y. Cloth, illustrated, 295 pages, 5 by 7½ inches.

This volume is made up of short biographies of twenty men of influence in the automotive industry, one of the most interesting of these accounts being that of the business career of Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio.

"THE TIMES OF CEYLON GREEN BOOK, 1926." Sixth edition. Published by The Times of Ceylon, London offices at Blackfriars House, New Bridge Street, E. C. 4. Cloth, 1389 pages, 5½ by 8½ inches.

In this latest edition of a well-known book of reference attention is called to the development in recent years of Ceylon, both commercially and industrially. The volume is larger than previous issues, and as usual is well-indexed and has a good map.

## New Trade Publications

"THIRD ANNUAL REPORT FOR 1925 OF THE PROPAGANDA DEPARTMENT of the International Association for Rubber and Other Cultivations in the Netherlands Indies." Activities of this Dutch organization are reviewed in a well-prepared pamphlet.

"INDUSTRY'S ELECTRICAL PROGRESS." AN ILLUSTRATED BOOKLET issued as Publication No. C-37 by The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin.

"THE FINANCIAL NEWS RUBBER MANUAL AND DIRECTORY, 1926." An illustrated publication of 98 pages, containing valuable statistics regarding plantation companies. A map and several charts add to the interest of this pamphlet which, printed on rubber latex paper, has been compiled by Alfred J. Liversedge, and published by The Financial News, 111 Queen Victoria street, London, E. C. 4, England.

"DE LAVAL HELICAL GEARS" IS AN ILLUSTRATED DESCRIPTIVE leaflet issued by De Laval Steam Turbine Co., Trenton, New Jersey. Such gears are specially advantageous for relatively low ratios of speed transformation as compared to spur gears.

"CAN WE COMPETE ABROAD?" A REVIEW, BY C. C. MARTIN, of the export and import trade of the United States. The publication, containing 155 pages, has been issued by the National Foreign Trade Council, Washington, D. C.

A SIX PAGE SUPPLEMENT HAS BEEN ISSUED BY THE ROESSLER & Hasslacher Chemical Co., 709-17 Sixth avenue, New York, N. Y., as an addition to their notebook data on the effect of various sulphur ratios in low zinc stocks containing their accelerator known as R. & H. 50.

"DE LAVAL PUMPS FOR CLEVELAND (FAIRMONT PUMPING Station)." An illustrated booklet descriptive of one of the recent De Laval installations, published by the De Laval Steam Turbine Co., Trenton, New Jersey.

"AERO BRAND RUBBER ACCELERATORS" IS THE TITLE of a new booklet of 18 pages published by the American Cyanamid Co., New York, N. Y. It contains much practical information on the desirable properties for a rubber accelerator. These are met in an unusual degree by di-phenyl-guanidine and di-ortho-tolyl-guanidine, respectively known as D.P.G. and D.O.T.G. Test data are shown graphically and sales specifications are given for both accelerators.

"TRADING IN RUBBER FUTURES ON THE RUBBER EXCHANGE OF New York, Inc." A booklet prepared by O. W. Kracht, 29 Broadway, New York, N. Y., and which gives details regarding the operating conditions of the New York Rubber Exchange.

HOUSE ORGANS AND BROADSIDES HAVE BEEN RECEIVED FROM THE B. F. Goodrich Rubber Co., Akron, Ohio; The Goodyear Tire & Rubber Co., Akron, Ohio; and The Dayton Rubber Manufacturing Co., Dayton, Ohio.

## Abstracts of Recent Articles

ON THE ORIGIN OF INTERFERENCE BY STRETCHING RUBBER.—Ernst A. Hauser, *Gummi-Zeitung*, June 18, 1926. 2090-91.

THE CONSTITUTION OF HIGH POLYMERS.—E. Geiger, *Gummi-Zeitung*, June 25, 1926, 2143-44.

THE PHYSICS OF GOLF BALLS. Popular treatment of the various problems involved in making and testing an ideal golf ball.—H. H. Sheldon, *Scientific American*, New York, August, 1926, 106-107. Illustrated.

RUBBER—AN EFFECTIVE MATERIAL TO RESIST CORROSION AND ABRASION.—A paper read in conjunction with the Second Chemical Equipment and Process Engineering Exposition, Cleveland, May 10 to 15, 1926.—B. W. Rogers, Cleveland Engineering Society, Hotel Winton, Cleveland, Ohio.

REPORT OF COMMITTEE D-11 A.S.T.M. ON RUBBER PRODUCTS. Annual Meeting June 21 to 25, 1926.—American Society for Testing Materials, 1315 Spruce street, Philadelphia, Pennsylvania.

REPORT OF COMMITTEE D-13 ON TEXTILE MATERIALS. Annual meeting June 21 to 25, 1926.—American Society for Testing Materials, 1315 Spruce street, Philadelphia, Pennsylvania.

SOME FACTORS INFLUENCING THE WEATHERING OF VULCANIZED RUBBER. A study of the surface phenomena of weathering as influenced by fillers, softeners, accelerators, etc.—N. A. Shepard, Stanley Krall and H. L. Morris. *Industrial and Engineering Chemistry*, 615-620.

IMPROVED RUBBER MIXING ROLLS. A review of the design and control of rubber mixing rolls as found in German practice.—P. Hoffman, *Rubber Age*, New York, July 10, 1926, 300,303. Serial, translation. Illustrated.

THE MANUFACTURE OF SOLE CRÉPE.—H. N. Blommendaal, *India Rubber Journal*, July 3, 1926, 34-36.

THE USE OF VULCAN COLORS IN THE RUBBER INDUSTRY.—Dr. Rudolf Dittmar, *Gummi-Zeitung*, June 4, 1926, 1980-1982. Tables.

MASS PRODUCTION OF TURNED HARD RUBBER GOODS. Suggestions for the smaller factory.—*Gummi-Zeitung*, June 11, 1926, 2035-2036. Illustrated.

MIXINGS WITH RECLAIM FOR MAKING CABLES.—Dr. Werner Esch, *Gummi-Zeitung*, June 11, 1926, 2040-2041. Formulas.

COMPARISON OF THE RESILIENCE OF LEATHER AND RUBBER HEELS.—Dr. Werner Esch, *Gummi-Zeitung*, June 25, 1926, 2146.

HEVEA MILDEW IN CEYLON AND MALAYA.—A. Sharples, *Malayan Agricultural Journal*, April, 1926, 88-90.

METHODS FOR PREVENTION AND CONTROL OF DISEASE IN PARA RUBBER CULTIVATION.—J. Mitchell, *Tropical Agriculturist*, April-May, 1926, 278-282.

GENERAL PRINCIPLES OF SELECTION AND THEIR APPLICATION TO HEVEA.—R. A. Taylor, *Tropical Agriculturist*, April-May, 1926, 287-290.

TREE SURGERY AS APPLICABLE TO RUBBER.—R. H. Stoughton-Harris, *Tropical Agriculturist*, April-May, 1926, 290-292.

MANURING EXPERIMENTS IN RUBBER GARDENS.—J. F. Schmölle, *Archief voor de Rubbercultuur*, June, 1926, 233-288. Tables, photographs, English summary, map.

DEEP TAPPING VERSUS SHALLOW TAPPING.—Herbert Ashplant, *The Planter's Chronicle*, May 29, 1926, 353-357. Tables.

STATIC DEFORMATIONS OF PNEUMATIC, SEMI-PNEUMATIC AND SOLID TIRES.—Dr. Raffaele Ariano, *The India Rubber Journal*, July 10, 1926, 69-74. Illustrations, graphs.

RUBBER DI (HYDROXYPHENYL) AND ITS DIMETHYL ETHER.—H. L. Fisher, H. Gray and E. M. McCollm. *Journal of the American Society*, 48, 1309-12 (1926).

## Legal Decisions

### Customs Appraisers

No. 106.—Protest 56106-G of The Golden Rule (St. Paul). Rabbits made of a brown spongy material classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable as manufactures of india rubber or gutta percha under paragraph 1439. Opinion by Sullivan, J. There was nothing in the record to show that the article is not a toy nor that it is in chief value of india rubber or gutta percha. The protest was therefore overruled.—*Treasury Decisions*, Volume 50, No. 1, page 17.

### SIL-O-CEL HEAT INSULATION

The conservation of heat is an important factor in the efficient operation of a rubber plant and although the working temperatures are much below those in metallurgical operations they are sufficiently great to warrant the stopping of loss through radiation by using the most effective insulation available on boilers, steam lines, vulcanizers and curing presses. Asbestos is probably the most commonly used heat insulation and serves its purpose well.

Sil-o-Cel is another insulating material used by many rubber manufacturers. Its insulation efficiency is rated at 60 to 70 per cent. It is believed to be the only known material which possesses such a minute cellular structure that it actually contains millions of cells in a single cubic inch and at the same time will stand up under temperatures of modern metallurgical furnaces. For industrial purposes it is supplied in the form of natural bricks, powder, granular calcined and bonded blocks. These varied forms adapt the material to every heat insulation need.—Celite Products Co., 11 Broadway, New York, N. Y.

## Interesting Letters from Our Readers

### A Suggestion to Foreign Firms

TO THE EDITOR:

DEAR SIR: Would you be good enough to call attention of your foreign readers to the fact that many concerns do not give the name of the country on their letter heads; and further that many postal department cancellation stamps do not give the country of origin.

We frequently have difficulty in knowing where to address our replies to foreign letters, and very often the signature is unreadable.

MANUFACTURER.

NEW YORK, N. Y., July 9, 1926.

### Wanted—A Messiah of the Scrap Dealers

TO THE EDITOR:

DEAR SIR: The brief article in your valued issue of July 1, "Reclaiming Industry Awaits Second Goodyear" is, on the whole, correct. However, as long as a second Goodyear, a second Edison and Lister or a second Berthold Schwarz do not arise; who can invent a process that will transmute shoddy from woolen rags into wool on the sheeps' back, much less make crude rubber from rubber shoddy?

There are also older problems to solve than our baby called "Caoutchouc." Think of sawdust back to real wood, leather scrap back to real leather, silk waste back to the cocoon, etc., *ad infinitum*. We are sure Carl Otto Weber, if he were alive today, could not improve upon Mitchell's or Marks' methods of reclaiming rubber, although within recent years some slight progress has been made, but we are still as far removed as ever from the Utopia of seeing an old automobile tire resurrected as rubber latex.

But all the same, Uncle Sam with his unlimited resources and unlimited possibilities might one day succeed and a man be born who will be the Messiah of the scrap rubber dealer.

SCHNURMANN'S OF LONDON

LONDON, ENGLAND, July 12, 1926

### AMERICAN EXPORTS AND IMPORTS OF RUBBER AND RUBBER GOODS

During the period, January-March, 1926, crude rubber, including latex, headed in value a list of fifty classes of commodities imported into the United States, a gain over the corresponding three months of the year previous of 205.4 per cent, or \$201,851,000 for the 1926 period, and \$66,086,000 for 1925. In a quantity comparison, such rubber imports during the first three months of 1926 represented a gain over the 1925 period of 29.5 per cent, or 263,025,000 and 203,093,000 pounds respectively.

Exports of automobile tires for the 1926 quarter advanced 50.7 per cent in value over the corresponding 1925 period, the respective values being \$7,591,000 and \$5,037,000. While a quantity comparison showed a gain for tires of 4.8 per cent for the 1926 quarter, shipments of pneumatic tubes fell off in number 18.2 per cent. Exports of rubber footwear also declined from 1,661,000 pairs in the 1925 quarter to 1,586,000 for 1926, a loss of 4.5 per cent.

It is interesting to note that the foreign trade of the United States in all classes of commodities amounted during the first quarter of 1926 to \$2,372,900,000, the largest total for the first quarter since 1920. United States exports however to Europe during the first quarter of 1926 were \$208,246,000, or 28 per cent, lower than a year ago, more than offsetting the country's increased exports to the other five divisions, where the gains ranged from 6.1 to 25.9 per cent.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. AN ENCYCLOPEDIA of tire manufacture, repair, rebuilding, machinery and processes.

## The Obituary Record

### A Leader in American Rubber Chemistry

**L**OTHAR E. WEBER, well known consulting rubber chemist and technologist, died suddenly of pneumonia at Whitefield, New Hampshire, July 17, 1926.

Dr. Weber was born in Vienna, Austria, November 25, 1886.

His father was Dr. Carl Otto Weber who was distinguished as a rubber chemist. The family removed to England and later to the United States. Lothar Weber was educated in the public schools of Manchester, England, and graduated at Harvard University in 1907. Two years later he received his doctorate at the University of Berlin. On his return from Germany he was employed in the laboratory of the Hood Rubber Co., Watertown, Massachusetts, and in 1910 was appointed research associate at the Massachusetts Institute of Technology. In 1911 he opened an analytic laboratory in Boston as his father had done before him and established an extensive rubber consulting practice.



Lothar E. Weber, Ph.D.

He numbered among his clients many of the most important American rubber companies manufacturing tires, footwear, mechanicals, etc., specializing in rubber reclaiming and legal cases. He was long identified with the study of rubber reclaiming problems and was vice-president of the Acushnet Process Co. and a partner in Knox, Weber & Co.

Dr. Weber served on the Committee of the International Rubber Exposition held at New York in 1912; was chairman of the Rubber Section, American Chemical Society in 1916. In 1918 he was connected with the Conservation Division of the War Industries Board at Washington, D. C. He contributed to English and French scientific publications and to *The India Rubber World* numerous scientific and other articles relating to the chemistry and technology of rubber. Among these are the following titles, most of which appeared within the past few years: "The Question of Gravity in Rubber Manufacture"; "Significance of Gravity in Rubber Manufacture"; "The Commercial Possibilities of Synthetic Rubber"; "Accelerated Life Test of Rubber Goods"; "Change of Resins in Vulcanization"; "Nature and Uses of Rubber Solvents"; "Use of Magnesia in Rubber Compounds"; "Is Commercial Synthetic Rubber Probable?"

In May, 1922, Dr. Weber visited England and delivered before the Institution of Rubber Industry in London a lecture on American accelerator practice. His crowning literary work was his recently published book "The Chemistry of Rubber Manufacturing," 1926. The volume is based on the final edition of "The Chemistry of Rubber" by C. O. Weber, father of the author and by its authorship substantiates the accuracy and practical value of Dr. Weber's scientific work.

He was a great lover and student of music and a gifted pianist. He was a member of the Harvard and St. Botolph clubs in Boston, of the American Chemical Society in this country and honorary member of the Institution of Rubber Industry in England. He is survived by his wife who was Miss Sybilla Wittell, daughter of Philip Wittell of New York.

Dr. Weber, following in the footsteps of his brilliant father, was long in the front rank of rubber chemists. While no revolutionary discoveries were his he was learned in his profession, sound in

his conclusions and very successful as an advisor. Personally he was alert, friendly, sincere, and greatly esteemed by all who knew him either socially or professionally.

### A Well Known Rubber Sundries Executive

George B. Clarke, assistant sales manager of the sundries division, Providence, Rhode Island, plant of the United States Rubber Co., died June 19, at the Jane Brown Memorial Hospital of that city as the result of injuries suffered in an automobile accident in Connecticut, on May 27. Mr. Clarke was treated by a physician near the scene of the accident and later resumed his usual occupation, not considering his injuries of a serious nature. A few days preceding his death, however, his condition became serious and he was removed to the hospital, where death ensued from meningitis.

George B. Clarke was born September 26, 1884, in Pasadena, California. Much of his life had been spent in the East, where he was educated, he having been a student at Tufts College. He first came into the rubber sundries business as buyer for the Jaynes Drug Co., of Boston, later entering the field of merchandising as New England representative of the Seamless Rubber Co. After spending several years in Boston with the Seamless organization, he accepted a position under C. C. Case and H. W. Waite as sales manager in the Providence sundries department of the Revere Rubber Co., now a part of the United States Rubber Co. Since 1916 he had maintained his headquarters in Providence, although he kept his permanent home in Boston.



George B. Clarke

Possessing great ability and many fine qualities, Mr. Clarke was one of the best rubber sundries merchandisers the rubber industry has produced, his foresight being one of his chief assets. He was a Mason and a member of the Boston City Club. He is survived by his widow, and his foster-parents, Mr. and Mrs. A. D. Mansell of North Brookfield, Massachusetts.

### Builder of Brooklyn Bridge

On July 21, Colonel Washington A. Roebling died at his home in Trenton, New Jersey, at the age of eighty-nine. A member of a family singularly conspicuous for its achievements in engineering fields, Colonel Roebling's greatest work was the erection of Brooklyn Bridge, a famous piece of engineering originally planned by his father, John A. Roebling. To the carrying forward of this great project the son, after his father's death, devoted all his energies, his health breaking for a time under the stress of the work, although he was able to superintend its completion.

Colonel Roebling received his training as a civil engineer at the Rensselaer Polytechnic Institute, Troy, New York, being graduated in the class of 1857, and after his graduation became at once associated with his father in the construction of some important bridges. Enlisting at the opening of the Civil War, Colonel Roebling showed great bravery, and took part in some conspicuous military services. He resigned his commission in the army in

January, 1865, and again became associated with his father in engineering duties.

Colonel Roebing was the first president of John A. Roebing's Sons Co., an organization incorporated in 1876 for the purpose of manufacturing insulated and other kinds of wire, the concern being destined to become one of the greatest wire mills of the country. Resigning for a time his duties as president, Colonel Roebing was succeeded in 1898 by his nephew, Karl G. Roebing. The latter died in July, 1921, when the uncle was again called into active service. He is survived by his widow, a son, and two grandsons.

A strong man, physically and mentally, Colonel Roebing left the world greatly bettered by his nearly ninety years of life. His activities, military, civic and industrial, were great and marked by sound sense and wonderful constructive genius. His outstanding contribution to the rubber business was the creation of a great rubber insulation plant under the management of the late Dr. F. A. C. Perrine. Although practically retired, Colonel Roebing up to the day of his death had a keen and intelligent interest in the vast strides made by the rubber industry.

### Twenty-four Years with United States Rubber Co.

Charles A. Emerson, for 24 years purchasing agent of the United States Rubber Co., in New York City, died June 12 at his home in Providence, Rhode Island. Although Mr. Emerson retired from active business several years ago, and lived in New York City for many years, he always kept his legal residence in Rhode Island and maintained his home there.

Mr. Emerson was born in Pascoag, Rhode Island, November 24, 1849, the son of Stephen and Cynthia (Stone) Emerson and received his early education at Nicholas Academy, Dudley, Massachusetts; Springside School, Pittsfield, Massachusetts, and Dean Academy, Franklin, Massachusetts. In 1869 he was employed for a short time by Fiske, Sayles and Co., woolen manufacturers at Pascoag, and in November of that year, he entered Bryant & Stratton Business College at Providence from which he was graduated the following May. He returned to Pascoag and became assistant cashier of the Pascoag National Bank and assistant treasurer of the Pascoag Savings Bank. In 1872 he went to Pawtucket, Rhode Island, to become associated with the Slater Cotton Co., where he was eventually made the superintendent of its plant.

In 1887, he became associated with the late Col. Samuel P. Colt, who was then assignee of the National Rubber Co. at Bristol. In April, 1888, the new National India Rubber Co. was organized and Col. Colt and Mr. Emerson were elected officers. In 1892 he was transferred from the National India Rubber Co., to organize and take charge of the purchasing department of the United States Rubber Co., which had just been formed. He remained at the head of the purchasing department until October 1, 1916, when he retired.

Mr. Emerson married Miss Elizabeth Gould Price in 1875. He is survived by four sons, Robert S. Emerson, Pawtucket, Rhode Island; Arthur H. Emerson, Chicago, Illinois; Charles J. Emerson, Winchester, Massachusetts and George S. Emerson, Springfield, Massachusetts.

### Death of E. E. Connolly

Elmer E. Connolly, treasurer of the Michelin Tire Co., Milltown, New Jersey, died July 24, at his summer home in Avon, New Jersey. Death was due to heart trouble from which he had long suffered. His obituary will appear in our next issue.

PHILIPPINE IMPORTATIONS OF AUTOMOBILES, TIRES AND PARTS totaled in December, 1925, 736,000 pesos, more than double the value, at 307,000 pesos, for the corresponding month of the year previous. Such imports reached a value for the entire year 1925 of 9,215,000 pesos. One peso equals \$0.50.

## Rim Requirements for Balloon Tires

Methods for determining the proper rims for the various sizes of balloon tires are explained in a recent issue of *The Goodrich*, house organ of The B. F. Goodrich Rubber Co., Akron, Ohio.

To determine the proper rim for the tire, it was formerly necessary only to double the nominal cross section and subtract that total from the overall dimension of the tire. This gave the actual diameter of the rim. Accordingly a 32 by 4 and a 33 by 4½ tire would both fit the same 24-inch rim. However, in using the cross-section figure, it must now be translated back to a nominal figure instead of the actual dimension. Thus a 29 by 4.40 tire fits a 21-inch rim for from the 29 is subtracted twice four, not 4.40, or eight, leaving 21.

The tabulation below represents various sizes of balloon tires with the corresponding rim measurements:

Balloon Tire Size Inches	Nominal or Calculating Size Inches	Rim Diameter Inches	Rim or Wheel Size Inches
<b>SMALL DIAMETER BALLOONS</b>			
28x4.40.....	(28x4)	20.....	27x3½
29x4.75.....	(29x4½)	20.....	28x4
29x4.95.....	(29x4½)	20.....	27x3½ or 28x4
30x5.25.....	(30x5)	20.....	28x4
30x5.77.....	(30x5)	20.....	28x4
32x6.00.....	(32x6)	20.....	28x4
32x6.20.....	(32x6)	20.....	29x4½
32x6.75.....	(32x6)	20.....	29x4½ or 30x5
34x7.30.....	(34x7)	20.....	29x4½ or 30x5
29x4.40.....	(29x4)	21.....	28x3½
30x4.75.....	(30x4½)	21.....	28x3½ or 29x4
30x4.95.....	(30x4½)	21.....	28x3½ or 29x4
31x5.25.....	(31x5)	21.....	29x4
33x6.00.....	(33x6)	21.....	30x4½
33x6.20.....	(33x6)	21.....	30x4½
33x6.75.....	(33x6)	21.....	31x5
31x4.95.....	(31x4½)	22.....	30x4
32x5.77.....	(32x5)	22.....	31x4½
<b>INTERCHANGEABLE BALLOONS</b>			
31x4.40.....	(31x4)	23.....	30x3½
32x4.95.....	(32x4½)	23.....	31x4
33x5.77.....	(33x5)	23.....	32x4½
35x6.75.....	(35x6)	23.....	32x4½
33x4.95.....	(33x4½)	24.....	32x4
34x5.77.....	(34x5)	24.....	32x4
34x4.95.....	(34x4½)	25.....	34x4½
35x5.77.....	(35x5)	25.....	34x4½

## TIRE SAVING JUSTIFIES GOOD ROADS

The value of improved highways depends upon a considerable number of factors, including their effects on gasoline consumption, tire wear, depreciation of the machine, etc., while their effects on the speed and load limits are also factors. The tests made by the Washington State Experiment Station relate mainly to the tire wear and the following analysis is based upon the results obtained with respect to this factor.

The average tire wear for a touring car of 3,500 to 3,700 pounds weight at an average speed of 30 m. p. h. as determined from the 1924 and 1925 tire tests was .554 pounds per tire on macadam and .080 pounds per tire on pavement per thousand miles. The total tire wear per car for all four tires in each case would be 2.216 and .320 pounds respectively, considering standard 33 by 4 tires only. The difference in tire wear per car on the two types of highway will be 1.896 pounds per thousand miles.

If it be assumed that an average of 3.45 pounds of tread rubber is worn off in the life of this type of tire, and if the cost of the tire be divided by the amount worn off during its life, the rate will be found to be approximately \$10 per pound. Then the cost of tires to operate the above car over average macadam roads will be \$18.96 per thousand miles more than to operate it over pavement. If the difference in annual cost per mile between pavement and macadam roads be taken at \$501.29, as derived from the Report of the Bureau of Public Roads for 1924, then, on the basis of tire wear alone, it will require a traffic of 26,400 such cars per year or an average of 72 cars per 24-hour day to justify the building of the better road.

The other advantages of improved roads enumerated above will cut down this figure considerably.—*Automotive Industries*.

# News of the American Rubber Trade

## Rubber Industry Outlook

THE close interdependence between the production, sale and use of automobiles focuses the interest of the rubber industry primarily on the doings of the motoring public. Motor vehicle production in the United States for the first half of the current year totaled 2,070,390 passenger cars and 254,387 trucks as compared with 1,866,131 passenger cars and 229,114 trucks in 1925. This is an increase of practically 11 per cent in the production of both cars and trucks.

At present automobile production is proceeding on the early summer schedule of 20 to 30 per cent below the spring peak rate. The domestic motor vehicle production for June totaled 383,575 cars and trucks as compared with 386,978 for May. This reduction is divided about equally between the car and truck outputs. It is considered due in large part to the work of introducing new models. The absence of price cutting is noted showing that producers believe the demand will continue to sustain a high output rate without the stimulus of price reductions.

These conditions indicate a large relative increase in the requirements for tires as original equipment for this season and a definite prospective increase in subsequent replacement demand.

In crude rubber London stocks have been steadily increasing and the same is true of domestic stocks, giving a total rubber reserve of about 90,000 tons August 1. These conditions and the normal seasonal position of tire production has made for a continuance of steady rubber prices, greatly to the advantage of the industry and particularly to the many small companies dependent largely on spot buying.

The cut of 10 to 20 per cent in tire and tube prices by the leading tire companies was in large part discounted. Manufacturers' tire stocks, however, are moving steadily into trade channels. As they were not excessive they will not long supply motorists' needs in the event of average good weather.

Following the tire price reduction factory tire schedules for July were advanced from 15 to 20 per cent over those in force during June. This practically puts the plants on capacity output. In other words, tire production now is equal to that of mid-summer of last year and the industry has passed the depression that hampered the replacement business for the first six months of this year.

In other branches of the industry production is in full seasonal volume. In the case of mechanicals this virtually means from 80 to 90 per cent of capacity, and in wire insulation full capacity while small wire companies are actually operating 24 hours daily. Heel companies show the least activity at about one-third capacity. This is attributed largely to the slackness prevailing in the leather shoe industry. In rubber footwear production is seasonal and some price cutting has recently appeared due to competition which has narrowed the margin of profits close to the limit. New and strong competition in the line of tennis shoes has lately appeared by the addition of this line on a large scale by one of the principal leather shoe companies. Here too the margin of profits is close, the statement being current that the manufacturing profit has nearly vanished.

## Financial

### Fisk Financial Position Improved

Of interest in connection with the payment of back dividends on the first preferred stock of the Fisk Rubber Co., Chicopee Falls, Massachusetts, through the distribution of \$1 a share in cash

and \$25 a share in first preferred convertible stock, is the fact that 181,000 out of 185,000 shares of first preferred stock have accepted that form of payment. The corporation has ordered a cash payment of \$26 a share on the small amount of stock which has not been deposited under that plan.

With the resumption of payments on the second preferred stock, the company has liquidated all overdue capital obligations with the exception of the arrearage on the second preferred shares, amounting to 35 per cent, and is expected that this will be liquidated before the end of the fiscal year, October 31. The working capital position of the company has shown a marked improvement, the ratio of current assets to current liabilities this year being 4 to 1 as compared with 2.5 to 1 a year ago.

## Annual Report of the Hood Rubber Co.

Sales for the fiscal year ending March 31, 1926, of the Hood Rubber Co., Watertown, Massachusetts, made a new record with a total of \$38,592,571.17 as against \$29,096,635.28 for the previous year, according to the annual report issued to stockholders under the date of May 20 by Frederic C. Hood, president.

Earnings were larger than any year since 1920, and—after payment of local, state, and federal taxes; after marking off a liberal depreciation to plant, in addition to liberal maintenance charge to expense; after marking down crude rubber inventory to current market prices; and setting up a reserve for commitments on contracts for crude rubber,—were sufficient to earn the interest on the \$6,000,000 debenture notes 7.65 times; to earn the dividend on the preferred stock 5.60 times; and to earn \$15.48 on the 120,000 shares without par value of the common stock.

Features of the report include the fact that 39 branches and depots of the Hood Rubber Products Co., Inc., distribute over 70 per cent of the company's products; that the total floor space now being used is 1,902,806 square feet for the manufacture and warehousing of products in Watertown; that the company owns or controls 95 acres of land; and that the total number of employees in Watertown and in branches has exceeded 10,000 for the first time.

Since 1915 the productivity of each employe has increased over 40 per cent due to labor saving devices and better working conditions. Products of the company now include rubber boots and shoes, vulcanized rubber soled canvas footwear, rubber soles and heels, pneumatic tires, pneumatic tubes, solid tires, hard rubber products, battery jars, and various specialties.

Consolidated balance sheet of the Hood Rubber Co., and Hood Rubber Products Company, Inc., as at March 31, 1926:

ASSETS	
Plant .....	\$8,200,000.00
Merchandise .....	15,899,475.45
Receivables .....	7,622,261.35
Prepaid Items .....	712,219.52
Cash .....	2,002,626.69
Investments in Other Corporations .....	26,000.00
Patents .....	1,000.00
	\$34,463,583.01
LIABILITIES	
Preference Stock 7½%—Hood Rubber Co. ....	\$5,309,800.00
Preferred Stock 7%—Hood Rubber Co. ....	930,200.00
Employees Special, 8%—Hood Rubber Co. ....	172,480.00
Common Stock—Hood Rubber Co. ....	6,000,000.00
(120,000 Shares without Par Value)	
Preferred Stock, 7%—Hood Rubber Products Co. ....	1,000,000.00
Debenture Notes—7%—15 Year Sinking Fund due Dec. 1, 1936 .....	6,000,000.00
Notes Payable .....	9,650,000.00
Accounts Payable .....	1,402,475.96
Hood Rubber Co., Thrift Club .....	233,707.49
Accruals .....	335,000.00
Surplus .....	3,429,919.56
	\$34,463,583.01

### International Acceptance Bank, Inc.

The publication of the half-yearly balance sheet of the International Acceptance Bank, Inc., 52 Cedar street, New York, N. Y., indicates the growth of the organization since its establishment in April, 1921. The total resources during the five years of operations have increased from \$31,572,782 to \$93,966,779, while the undivided profits have risen during the period from \$82,000 to \$3,560,755.

A further development has been the organization in March, 1926, of the International Acceptance Securities & Trust Co., with paid in capital and surplus of \$1,000,000, entirely owned by the International Acceptance Bank, Inc. Paul M. Warburg is chairman of the board of directors of both institutions and F. Abbot Goodhue is president.

### Dividends Declared

COMPANY	Stock	Rate	Payable	Stock of
Firestone-Apsley Rubber Co.....	Pfd.	3 1/4 % q.	June 30	June 21
Firestone Tire & Rubber Co.....	Com.	\$1.50 q.	July 30	July 10
Firestone Tire & Rubber Co.....	6 % Pfd.	1 1/4 % q.	July 15	July 1
Firestone Tire & Rubber Co.....	7 % Pfd.	1 3/4 % q.	Aug. 15	Aug. 1
Fisk Rubber Co.....	1st Pfd.	\$1.75 q.	Aug. 2	July 15
Fisk Rubber Co.....	Con. 1st Pfd.	\$1.75 q.	Aug. 2	July 15
Fisk Rubber Co.....	2nd Pfd.	\$1.75 q.	Sept. 1	Aug. 15
Miller Rubber Co.....	Com.	\$0.50 q.	July 26	July 9
United States Rubber Co.....	Pfd.	\$2.00 q.	Aug. 14	July 20

### New York Stock Exchange Quotations

	July 23, 1926	High	Low	Last
Ajax Rubber, com.....		8 3/4	8 1/4	8 3/4
Fisk Rubber, com.....		17 1/4	17 1/4	17 1/4
Fisk Rubber, 1st pfd. at (7).....		80 1/2	80 1/2	80 1/2
Goodrich, B. F. Co., com (4).....		48 1/2	48 1/4	48 1/2
Goodyear Tire & Rubber, pfd. (7).....		105 1/2	105 1/2	105 1/2
Intercontinental Rubber, com. (1).....		16 3/4	16 3/4	16 3/4
Kelly-Springfield Tire, com.....		13	12 3/4	13
Lee Rubber & Tire, com.....		8 3/4	8 1/4	8 3/4
United States Rubber, com.....		57 1/4	56 1/4	56 3/4

### Akron Rubber Stock Quotations

Quotations of July 20, supplied by Otis & Co., Cleveland, Ohio.

COMPANY	Last Sale	Bid	Asked
Aetna pfd.....	18	15	18
Aetna pfd.....	93	...	...
Falls com.....	9	...	9 1/2
Falls pfd.....	18 1/2	...	20
Faultless com.....	43	40	44
Firestone com.....	109 1/2	108 1/2	110
Firestone 1st pfd.....	102	101	102 3/4
Firestone 2nd pfd.....	98 1/4	97 1/2	99 1/4
General com.....	140	140	145
General pfd.....	106 1/4	107	110 1/2
Goodrich com.....	53	...	...
Goodrich pfd.....	98	...	...
Goodyear com. V. T. C.....	36 1/2	...	...
Goodyear pfd. V. T. C.....	103 1/4	...	...
Goodyear pr. pfd. V. T. C.....	106	...	...
India com.....	31	30	31 1/2
Miller com.....	34 1/2	...	...
Miller pfd.....	100	100 1/2	101
Mohawk com.....	35	...	37
Mohawk pfd.....	70	...	73
Seiberling com.....	24	23 1/2	25
Seiberling pfd.....	96	95 1/2	96
Star com.....	12	...	15
Star pfd.....	35	...	...
Swinehart com.....	8 1/4	...	...

### New Incorporations

**AMERICAN RUBBER CORPORATION**, July 12, 1926 (Delaware), capital \$1,000,000 par value \$100. Incorporators: Mark W. Cole, James H. Hughes and James L. Wolcott, all of Dover, Delaware. Principal office, Dover, Delaware. To manufacture, produce, buy, sell, export, import and generally deal in rubber and gutta percha, and all goods of which rubber and gutta percha are component parts.

**BALLARD-THOMPSON, INC.**, May 12, 1926 (Washington), capital \$25,000. Incorporators: O. G. Ballard and J. M. Thompson. Principal office, Vancouver, Washington. To buy and sell at wholesale or retail automobile parts, accessories and tires.

**BROOKLYN SHIELD & RUBBER CO., INC.**, July 12, 1926 (New York), capital \$500. Incorporators: Murray C. Becker, Julien W. Newman and I. Henry Kutz, all of 100 Broadway, New York City. Principal office, Brooklyn, New York. To manufacture rubber goods.

**BURLINGTON RUBBER CO., INC.**, April 2, 1926 (Vermont), capital \$10,000, one hundred shares of \$100 each. Incorporators: William J. Crochetiere and Carroll A. Priest, both of 133 St. Paul street, and J. A. McNamara, 178 Main street, all of Burlington, Vermont. Principal office, Burlington, Vermont. To carry full line of tubes and tires and do vulcanizing and repairing.

**DANVILLE TIRE CO.**, June 24, 1926 (Illinois), capital \$25,000. Incorporators: Charles P. Houghton, president and treasurer; Mrs. Charles P. Houghton and L. W. Baker. Principal office, 201 West Main street, Danville, Illinois. Retail tires and tubes.

**ELWOODY TIRE CO., INC.**, June 25, 1926 (New York), capital \$10,000. Incorporators: Barney H. Elman, N. A. Elman and Howard P. Wood. Principal office, Poughkeepsie, New York. Deal in tires and tubes, wholesale and retail.

**FITCHBURG TIRE SERVICE CO.**, May 18, 1926 (Massachusetts), capital \$25,000. Incorporators and officers: Wilfred B. Chase, president, 22 Winter street, Fitchburg, Massachusetts; V. M. Greer, treasurer, Firestone Park, Akron, Ohio; Ellery D. Manley, clerk, 120 University Road and Franklin King, both of Brookline, Massachusetts. Principal office, Fitchburg, Massachusetts. To deal in tires and auto accessories.

**FLIGEL RAINCOAT HOUSE, INC.**, July 14, 1926 (New York), capital \$5,000. Incorporators: Mitchell Fligel, 45 West 27th street, and Alfred Efrin, 1440 Broadway, both of New York City; Julius Aronow, 1176 Walton avenue, Bronx, New York. Principal office, Manhattan, New York. Waterproofing material and raincoats.

**GEWERT PROCESS TIRE CO.**, July 1, 1926 (New Jersey), capital 120 shares of preferred stock of the par value of \$100 each, and 1,000 shares of common stock without par. Incorporators: Louis M. Gewert, 91 Court street, and William C. Martin, 668 Mt. Prospect avenue, both of Newark, New Jersey; and Charles Pausner, 55 Locust avenue, New Rochelle, New York. Principal office 763 Broad street, Newark, New Jersey. To manufacture rubber goods, articles and automobile tires.

**HAARTZ-MASON RUBBER MFG. CO.**, June 29, 1926 (Massachusetts), capital \$50,000 preferred stock, and one thousand shares of common stock without par value. Incorporators and officers: John C. Haartz, president, 33 Wedgemere avenue, Winchester; Jesse H. Mason, treasurer, 12 Walnut street, Watertown; and C. Leo Thibault, 128 Faxon Road, Quincy, all of Massachusetts. Principal office, Watertown, Massachusetts. To deal in crude rubber, manufacture rubber products, coating fabrics with rubber and dealing in cotton goods or other fabrics.

**JAYNE-DUNCAN TIRE CO.**, April 20, 1926 (Oklahoma), capital \$6,000. Incorporators: Clint Jayne, Dewey Duncan and Albert Jayne, all of Enid, Oklahoma. Principal office, Enid, Oklahoma. To sell tires, tubes and auto accessories.

**KASE RUBBER CO., INC.**, June 28, 1926 (New York), capital 500 shares par value \$100, and 100 shares no par value. Incorporators: Hannah Saltanoff, Flora Davis and A. R. Zaitchick, all of 276 Fifth avenue, New York City. Principal office, Manhattan, New York. To manufacture toys of synthetic rubber.

**MILLER TIRE CO.**, June 2, 1926 (Massachusetts), capital \$3,500. Incorporators and officers: Sumner Wesley Newcomb, president, and Edwin J. Newcomb, treasurer, both of Newtonville, Massachusetts; and Lucy Agnes Gleason, clerk, 342 Auburndale avenue, Auburndale, Massachusetts. Principal office, Boston, Massachusetts. To deal in automobile and truck tires and tubes and other merchandise consisting of rubber, fabric, etc.

**NATIONAL MARBLEIZED RUBBER FLOORING CO.**, July 9, 1926 (Delaware), capital 1,000 shares without nominal or par value. Incorporators: J. Vernon Pimm, Philadelphia, Pennsylvania; E. M. MacFarland, Camden, New Jersey; and R. L. Spurgeon, Wilmington, Delaware. Principal office with the Corporation Guarantee and Trust Company, 927 Market street, Wilmington, Delaware. To manufacture, buy, sell, distribute and deal in rubber flooring and rubber products of every class and description.

**NORTH AMERICAN TIRE CO.**, May 11, 1926 (Mississippi), capital \$7,000. Incorporators and officers: T. A. Green, president; L. T. Griffin, vice-president; L. B. Brown, secretary and treasurer; and A. L. Green, all of Natchez, Mississippi. Principal office, Natchez, Mississippi. To carry on a general tire business, both wholesale and retail, and buy and sell accessories, inventions, etc.

**RUBBER GOODS, INC., OF NEW JERSEY**, July 2, 1926 (New Jersey), capital 4,000 shares of common stock without par value, and 650 shares of preferred stock of the par value of \$100 each. Incorporators: Albert G. Tompkins and Gertrude C. Crowell, both of Newark, New Jersey; Raymond Lindley, Ridgefield Park, New Jersey. Principal office, 230 Central avenue, Newark, New Jersey. To manufacture rubber and mechanical goods of all kinds.

**WANGLER TIRE CO., INC.**, June 23, 1926 (New York), capital \$10,000. Incorporators: Bertha Wangler, Louis Wangler and Conrad Wangler, all of 404 First street, Albany, New York. Principal office, Albany, New York. To manufacture tires.

### The Rubber Trade in the East and South

H. A. Derry has been promoted to the position of assistant manager of the heel and sole department of the United States Rubber Co., his headquarters having been transferred from Boston to the organization's main offices at 1790 Broadway, New York, N. Y. Associated with the company for ten years, Mr. Derry's work has been entirely with the heel and sole division, where he was recently in charge of sales to manufacturers.

F. R. Henderson, of Henderson, Helm & Co., and president of the Rubber Exchange of New York, sailed for London July 14 on the "Berengaria." During his stay abroad of a month Mr. Henderson will have the opportunity of discussing the crude rubber situation with leading growers and marketing interests.

E. C. Prouty, for the past ten years in charge of production at the Morgan & Wright plant of the United States Tire Co., Detroit, Michigan, has been recently transferred to the technical service department of the main organization, 1790 Broadway, New York, N. Y.

Philip Billhardt has become associated with Herron, Rodenbaugh & Meyer, Inc., crude rubber dealers, with offices at 25 Beaver street, New York, N. Y.

William Raymond Morton, New York representative of the Thermoid Rubber Co., Trenton, New Jersey, has been strangely missing since May 29. After visiting his mother at Trenton he suddenly disappeared. His business affairs were found to be in good order.

The Keystone Tire & Rubber Co. has recently transferred its sales and general offices to 250 West 54th street, New York, N. Y. The executive offices will, however, continue to be at the company's factory, Kingsbridge Road, New York City. George A. Dorfman is president.

The annual outing of the office and engineering departments of the Farrel Foundry & Machine Co., Ansonia, Connecticut, was held June 26 at Double Beach, Connecticut. Much interest was shown in the various athletic events prepared for the occasion, one of these being a baseball game between the married and single men. After the serving of an excellent shore dinner, brief addresses were made by various officials of the organization.

The plant of the Beacon Falls Rubber Shoe Co., College Point, Long Island, has been closed, the company having decided to concentrate operations at its main plant at Beacon Falls, Connecticut, in the interests of more economical production. The College Point plant was opened in 1916.

E. M. & F. Waldo, Inc., specializing in pigments and colors for the rubber industry, have removed their executive offices to their factory at Muirkirk, Maryland, retaining, however, the New York office at 11 Broadway, which will be used as a sales division only. For nineteen years the organization has made its headquarters in New York City, and the past fourteen years at 11 Broadway.

The Southern Brighton Mills, Shannon, Georgia, have commenced the manufacture of tire fabric, the 25,000 spinning spindles and accompanying machinery having been moved from Passaic, New Jersey. A complete village has been built in connection with the mill. R. A. Morgan is general manager.

Carl Immegart has been placed in charge of a branch opened some weeks ago at Lexington, Kentucky, by The Goodyear Tire & Rubber Co., Inc., Akron, Ohio.

The textile mills of the Goodyear Tire & Rubber Co., Akron, Ohio, at Cedartown, Georgia, will be trebled in capacity, while more than 100 operatives' houses are to be erected. The new plant is the first of the Goodyear properties to be built in the South, the other textile mills being at Killingly, Connecticut, New Bedford, Massachusetts, Los Angeles, California, and St. Hyacinthe, Quebec, the last-mentioned plant having been recently purchased by the Canadian Goodyear factory. With these five mills in operation the Goodyear company will be able to supply about two-thirds of its tire fabric requirements.

The Chromium Corporation of America has taken over the patents of the chromium plating process developed by the Chemical Treating Co. and the Chromium Products Corporation, the latter a subsidiary of the Metal & Thermit Corporation. Crodon, an alloy composed almost wholly of metallic chromium, has been found to be well adapted for mandrels, forms and molds, because of its hard, non-corrosive nature which preserves the high finish so desirable in certain types of rubber manufacturing equipment. John T. Pratt is chairman of the board of the new corporation, and Dr. F. H. Hirschland is president.

June sales for the Hewitt Rubber Co., Buffalo, N. Y., were 26 per cent greater than the total for May, according to President John H. Kelly. This again includes the business of the Gutta Percha & Rubber Manufacturing Co., recently acquired by Hewitt. Orders on hand are keeping the July production schedule at capacity and indications point to continued good business. Busi-

ness from railroads, mines, mills, and other users of mechanical rubber goods is active and consistently steady. B. C. Swinehart, manager of the commercial tire department, has returned from the Middle West and the Pacific Coast, and reports good activity in these sections both in tires and rubber products generally.

#### N. T. D. A. SEEKS PRICE PROTECTION

In a bulletin being sent out by the National Tire Dealers' Association, 242 West 56th street, New York, N. Y., the following statement is made by George J. Burger, secretary-treasurer:

An announcement made on July 7, which will be adopted no doubt universally by all manufacturers, was that orders placed on or after July 6 will carry October 1 price protection. You can readily realize that when October 1 arrives dating and fall orders will then be in order, and the outlook for price protection until the spring of 1927 is very favorable. We would therefore recommend to our members that anyone who purchased a stock order after June 25 should insist upon manufacturer or manufacturers giving this additional protection of October 1 dating.

#### Rhode Island Notes

The Woonsocket Rubber Co. closed its two plants at Woonsocket and Millville, Rhode Island, Friday night, July 16 for three weeks, and operations are scheduled to resume on August 9. The shutdown is not unusual during the summer period, according to the factory management, but is for the purpose of taking advantage of slack business for a general overhauling and repairing.

Herbert A. Behre, export manager of the Davol Rubber Co., Providence, Rhode Island, who is a member of the Foreign Trade Commission of the Providence Chamber of Commerce, was one of the representatives of the Providence business men and manufacturers at the recent session of the New England Foreign Trade Conference at Boston, Massachusetts.

The entire factory of the National India Rubber Co., Bristol, Rhode Island, resumed operations on Tuesday, July 6, following a shutdown from the previous Saturday noon on account of the Independence Day holiday.

Among the donations of trophies for the Marathon race in the municipal athletic tournament in Providence on July 5, was one by the Firestone Tire & Rubber Co.

The Columbia Narrow Fabric Co. has been making extensive improvements around its property at Columbia Heights, at Shannock, Rhode Island, where the company owns a large number of dwellings occupied by operatives. One of the most noticeable improvements was the refilling and widening of the main roadway leading into the section.

Rhode Island rubber manufacturing plants were well represented at the conference held at Providence recently by 65 members of the Rhode Island branch of the New England Industrial Nurses' Association. Miss Katherine Leydon, Davol Rubber Co., Providence, president of the hostess branch, was chairman of the committee in charge of the arrangements for the reception and entertainment of the delegates. Among the other members of the committee were Mrs. Althea Foster, United States Rubber Co., and Miss Ruth Graham, National India Rubber Co., Bristol, Rhode Island.

John Henry Duffy, employed at the factory of the National India Rubber Co., Bristol, Rhode Island, for sixty years, was congratulated on his 88th anniversary by a large number of relatives and friends July 6, at his home, 326 Wood street, Bristol. Born of Irish parentage in Manchester, England, July 6, 1838, Mr. Duffy came to this country with his parents in 1848 and located in Bristol where he has lived ever since. He was employed as a bootmaker at the National India Rubber Co. for 26 years and

then entered the shipping department where he remained until about two months ago when he was retired.

### New Buildings and Improvements

While all of the manufacturing rubber plants in Rhode Island have been undergoing annual overhauling and improvements during the past month, there is more activity in the erection of additions and new buildings than has been the case in several years. Contracts have been awarded and ground broken at Bucklin street and Bellevue avenue, Providence, for a new brick building to be used as a warehouse, storage and show rooms for the Goodyear Rubber Co. It will cover 10,000 square feet of land and while but one story at present is so arranged that additional stories may be constructed. Contracts have been awarded for two office buildings at the plant of the American Electrical Works, Phillipsdale, East Providence. The buildings, which will include a one-story brick building for the paymaster's department and a hospital, will be 54 by 22 feet, while the second one which will be the main office will also be one-story of brick, 110 by 52 feet.

### The Rubber Trade in New Jersey

The recent cut in prices of tires and tubes had a beneficial effect upon the retail dealers of Trenton, New Jersey, and business immediately took a jump. Practically all the tire manufacturing companies cut 20 per cent in tubes, 10 and 15 per cent in tires. It is reported that mechanical rubber goods have been cut 10 per cent.

The Mechanical Division of the Rubber Manufacturers' Association of New Jersey recently entertained the Mechanical Division of the Rubber Association of America at a dinner at the Trenton Country Club. Following the dinner the members of the New Jersey organization and their guests enjoyed golf for the remainder of the day. J. C. Weston, president of the Ajax Rubber Co., and A. L. Viles, general manager of the Rubber Association of America, were among the guests. There was no business meeting.

The recent auction of the Bergougnan Rubber Co., Trenton, New Jersey, has been denied by Federal Judge William N. Runyon in the United States District Court, as the French owners protested that the price of \$151,373 was insufficient. Some of the machinery had already been sold, but the court relieved the purchasers of the equipment owing to the fact that the sale of plants and land was denied. The holdings are said to have represented an original investment of \$750,000.

The Murray Rubber Co., Trenton, New Jersey, announces that the recent cut in tires and tubes, places them on a level with prices of two years ago. There has also been a 10 per cent cut in prices of mechanical rubber goods. The Murray company is now operating night and day with three shifts in the curing department and two shifts in the tire and tube department.

Ralph Hulse, Trenton realty broker, recently purchased the plant and equipment of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, for \$15,100. The plant was sold at sheriff's sale after action had been brought by the Mechanics National Bank of Trenton to satisfy claims approximating \$186,510.64. The sale must now be confirmed by the Court of Chancery.

Business has improved at the plant of the Ajax Rubber Co., Trenton, New Jersey, and the factory is operating about 90 per cent capacity. This is an increase over the previous month. William W. McMahan, general manager of the company, has been on a business trip to Detroit, Michigan, where he visited the motor plants.

The Luzerne Rubber Co., Trenton, New Jersey, announces that the trade in the hard rubber line is dull at the present time.

The Thermoid Rubber Co., Trenton, New Jersey, reports business good in all the departments, especially in the brake lining department.

General C. Edward Murray, president of the Crescent Insulated Wire & Cable Co., Trenton, New Jersey, recently celebrated his sixty-third birthday at his summer home at Spring Lake, New Jersey.

Whitehead Brothers Rubber Co., Trenton, New Jersey, has let a contract for a one-story brick addition to the factory to be used for manufacturing purposes.

Theodore S. Cart, secretary of the Pocono Rubber Cloth Co., Trenton, New Jersey, has returned from a business trip to Detroit, Michigan.

The Roden Laminated Tire Co., Union City, New Jersey, has a well-equipped plant for the manufacture of the Roden laminated tire. The feature of this tire is that it is filled with a series of closely laminated rubber diaphragms in the form of an open arch vulcanized integrally with the tire casing. For the present it is to be made in 30½ size only, straight side and clincher. Production is in charge of Wilmer Dunbar, well known as a rubber engineer and tire designer.

### Consumers' Rubber Refining Co.

A specialty is to be made of crude rubber washing and refining by the Consumers' Rubber Refining Co., Inc., 337-339 Pine street, Elizabethport, New Jersey. With a plant capacity of more than 600 tons monthly, the concern will be able to handle lots of 150 tons or more at a time and deliver them within a period of one week. A complete laboratory has been equipped for physical and chemical tests, its services being at the disposal of the new company's clients. Milling and compounding will also be carried forward upon request.

The following are executives: R. W. Patrick, president; W. H. Brawley, vice president; and Milton Anderson, secretary and treasurer.

### Cooper Hewitt Enlarges Plant

Since the removal, fourteen years ago, of the Cooper Hewitt organization from New York City to Hoboken, New Jersey, additional buildings have been acquired, while at the present time a still further expansion is under consideration. The new structure which is now being planned for housing the company's glassware manufacturing and shipping departments will be six stories high and will measure 100 by 430 feet. Space will also be included for the general offices and sales department, while the new construction will enable the laboratories of the company to be brought together in one place. The organization, which specializes in industrial illumination, is headed by William A. D. Evans.

### The Rubber Trade in Massachusetts

The rubber industry as a whole here is experiencing a renewed demand for merchandise which points to record-breaking operations for the second half year. With the summer vacation and inventory periods in the rubber footwear field over, many of the factories report production oversold on winter merchandise which means overtime schedules until December. Mechanical, proofing, heel and sole, sundries, and reclaiming plants are busier than any time since the first of the year, and replacement demand for tires has improved considerably.

Buying in cotton ducks, drills, sheetings, and osnaburgs by the hose and belting mills, auto-topping trade, proofing, and shoe industries has been very heavy, indicating large bookings of orders.

Interest in the Boston Shoe and Leather Fair held in Mechanics Building, July 6, 7, 8 was keen among the rubber trade, many out-of-state rubber shoe designers being in attendance to keep in touch with the style trends. Among the rubber exhibitors were: Everlastik, Inc.; Goodyear Tire & Rubber Co., heels and soles; Alfred Hale Rubber Co., crêpe rubber soles; Panther Rubber Co., heels and soles; and the United Shoe Machinery Corporation.

W. W. Benner, formerly with the Firestone Tire & Rubber Co., Akron, Ohio, where he served in various executive capacities as manager of Plant No. 2, and assistant to J. W. Thomas, vice president, in charge of subsidiary plants, is now with the Hood Rubber Co., Watertown, Massachusetts, assisting C. H. Roper, general superintendent, along special lines.

The plant and offices of the Tyer Rubber Co., Andover, Massachusetts, manufacturers of Tyrian rubber goods, will be closed July 30 to August 16 for the annual vacation period.

Heel and sole manufacturers are feeling the impetus of renewed activity in the leather shoe industry. Reports from Maine indicate a production of 70-75,000 pairs per day. In the Auburn district, Ault-Williamson, McLaughlin & Sweetland, and Wood H. Smith are running at capacity, and in the Kennebec Valley, the R. P. Hazard Shoe Co., with two factories at Gardner and Belfast, is now turning out a combined production of 800 dozen a day. This concern has been developing its own system of retail shoe stores, a chain being started in Maine cities of late.

The Fairhaven Mills plant, formerly used for the manufacture of tire fabrics at New Bedford, Massachusetts, is for sale, but the special committee has found it so difficult to dispose of the plant as a whole owing to prevailing conditions in the cotton industry, that it has been decided to dispose of plant and equipment in parcels. The Harding-Tilton Co. who formerly marketed Fairhaven Mills tire fabric are now having their fabric manufactured at Worth Mills, Fort Worth, Texas.

On July 1, B. M. Horter, formerly connected with the Philadelphia division of The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, assumed charge of the company's Boston office. He has been with the organization since 1916.

The Meade Rubber Co., Stoughton, Massachusetts, specializing in the manufacture of rubberized fabric and rubber heels, announces the enlargement of the sales forces of its shoe department. Charles C. Dailey is manager of this division of the Meade organization.

An interesting comparison between the original and present day plants of the Hood Rubber Co., Watertown, Massachusetts, is afforded by a series of printed folders which are being mailed to stockholders with their dividend checks. The thirtieth anniversary of the organization will be held on October 12, 1926, and during this period the annual sales have increased from \$412,000 to \$38,500,000, with the number of buildings growing from one to thirty-eight and the number of employes from 225 to 10,000. The daily footwear capacity has increased from 3,000 to 90,000 and the daily tire capacity from nil to 4,000. The present number of stockholders is 4,600 against a total of 6 at the inception of the business.

The Medford Woolen Co., Medford, Massachusetts, manufacturer of wool boots and heavy hose for the rubber shoe trade for many years, has been forced into liquidation. The plant and equipment was purchased by the First National Bank of Boston, who held some of the company's paper. There are rumors that the company will be refinanced by a group of eastern rubber footwear companies and operated for the joint benefit of those participating, but nothing definite has materialized at this writing.

Samples for the 1927 tennis line will go out to the trade this month, and new price lists are being prepared. Lower prices are predicted owing to the drop in crude rubber and cotton duck.

Kenworthy Bros., Stoughton, Massachusetts, manufacturers of Kendex insoling, and combiners of ducks for the rubber shoe trade, report business to be the best for several years.

The announced shutdown of the Converse Rubber Shoe Co., Malden, Massachusetts, from July 12 to 31 inclusive, did not materialize fully, as a full ticket of bathing shoes and tires and tubes was maintained throughout this period owing to extra rush orders received with the arrival of seasonable weather. The footwear plant will open August 2 with a full ticket, and orders on the books in excess of any year for three seasons.

The Hood Rubber Products Co., Inc., Watertown, Massachusetts, has moved its Boston branch office from 276 Summer street to larger and better equipped quarters at 301 Congress street. David F. Hoskins has been placed in charge.

### Colloid Symposium

The fourth national symposium under the auspices of the Massachusetts Institute of Technology and Northeastern Section of the American Chemical Society, was held at the Massachusetts Institute of Technology, Cambridge, Massachusetts, June 23 to 25, inclusive.

Among the numerous papers presented was one on X-rays and colloids by G. L. Clark wherein he gave the results of an important series of investigations on colloidal materials. Normally one considers rubber as being about as typical a non-crystalline material as can be imagined, and yet X-ray photographs show it to be crystalline or at least to contain crystalline material. Analysis of the data shows that the maximum number of  $C_6H_5$  groups in the unit cell for rubber is 6, for balata also 6 and for gutta percha 12. An interesting example of a gradual transition from colloidal to crystalline is afforded by gas black, which on successive heating, shows a perfectly continuous transformation into the crystalline graphite. As Professor McBain commented, "the day is fast approaching when every research laboratory must have its X-ray outfit, together with men capable of interpreting the data obtained thereby."

### The Rubber Trade in Ohio

With sales stimulated by warmer weather and the recent tire price cuts, rubber factories in Ohio are running virtually at capacity to fill the increased demand for tires and other products. Total production of rubber products is at the highest rate noted this year, and is about on a par with business at this time last year, when the entire industry was experiencing a mid-summer boom.

Output of tires in the Akron district is estimated around 130,000 casings and 145,000 tubes a day, compared with about 115,000 tires and 125,000 tubes at the beginning of July, 100,000 in May and June and 85,000 earlier in the year. Production in the larger plants has been increased slowly during the past few weeks, and the smaller companies have been especially busy, operating at full capacity. Boom conditions do not prevail in any of the factories, however, and there has been no large increase in the number of men employed. Estimated daily production of the leading factories places that of Goodyear at close to 40,000 tires, Goodrich around 24,000, Firestone more than 30,000, Miller between 8,000 and 10,000, General and Seiberling, between 3,000 and 4,000. In most cases present output represents a gain of from 15 to 20 per cent over last month. Goodyear's production has been increased in accordance with seasonal demands, according to officials, until it is practically at the peak. The Firestone plant is turning out its entire capacity of small-sized balloon tires for Ford equipment.

Opinion is still divided among leaders in the industry as to the wisdom of the tire price cut, ranging from 10 to 20 per cent, which was initiated July 6 by the Goodyear Tire & Rubber Co., and immediately followed by all other companies. Most tire company executives did not think a reduction should have been made at that time, and are still of that opinion. At the end of June the larger concerns still had considerable stocks of tires on hand which were made up of rubber costing between 70 and 80 cents a pound. By delaying the price cut another month or two, it is pointed out, they would have had an opportunity to work off these stocks, and would then be in a position to benefit by the lower price of crude rubber. To stave off such action, a number of manufacturers on July 1 had made arrangements to guarantee their dealers that the then existing scale of prices would be maintained until August 1.

Some manufacturers on the other hand believe the public had

been closely following the tendency of the crude rubber market. Motorists in need of casings had been reluctant to enter the market for them, believing that manufacturers would eventually be compelled to reduce prices. These manufacturers favored a reduction in the hope that a price decrease at that time would increase sales.

The War Department, through Captain Clarence Longacre, stationed in Akron, Ohio, has contracted with various Akron rubber companies for delivery within thirty days after a declaration of war, 80,000 pneumatic tires. Solid tires to the extent of 25,000 have been tentatively ordered. Deliveries can be made without cutting into the civilian supply. Captain Longacre was detailed several months ago to make a survey of the rubber industry in preparation for industrial mobilization in the event of war. Should war be suddenly declared, motor transport facilities would be mobilized in two weeks, and in 30 days practically every rubber tired vehicle would be ready to move.

More than 5,000 members of the Service Pin Association of the Goodyear Tire & Rubber Co., Akron, Ohio, attended that organization's second annual party in the Goodyear Theater, on the evening of July 24. A program of motion pictures and five acts of vaudeville was presented. President P. W. Litchfield addressed the employees. Four big picnics were held by employees of Goodyear Plant 2 on Saturday, July 17, when the plant was shut down for the entire day. The mechanical goods division outing was held at Springfield Lake, reclaiming plant division at Brady Lake, and the transportation division at Sandy Beach. Employees of the materials control division of both plants held their picnic on the same day at Crystal Lake.

Sales of the Star Rubber Co., Akron, Ohio, for June were in excess of \$300,000, it is announced by D. A. Grubb, vice-president and general manager. Production was at the rate of 750 tires and 900 tubes a day, and orders now on hand will keep the plant running at capacity for the next two months. The company has recently put on the market a new line of Starco tires, made in practically all sizes, including balloons and high pressure types, to sell at popular prices. Arthur O. Roberts was recently appointed advertising manager.

W. C. State, consulting engineer of the Goodyear Tire & Rubber Co., Akron, Ohio, recently received his 25-year service pin from President P. W. Litchfield. Members of the factory staff and executive personnel witnessed the presentation.

On June 1 Dr. H. A. Winkelmann became associated with The Philadelphia Rubber Works Co., Akron, Ohio, taking charge of all research, laboratory and development activities. The organization specializes in the manufacture of reclaimed rubber.

Several thousand employees of the Mohawk Rubber Co., Akron, Ohio, attended the annual factory picnic, July 17 at Summit Beach Park. George Frick had charge of the entertainment program, which included two baseball games, athletic events, and contests for everyone.

W. W. Sigler, formerly associated with the Goodyear organization, has joined the staff of sales engineers of The Akron Standard Mold Co., Akron, Ohio.

Dr. W. C. Geer, formerly vice-president of The B. F. Goodrich Co., and a leading rubber chemist, has returned to this country with his family after an extended trip abroad. He expects to make his home at New Rochelle, New York.

The K & W Rubber Co., Delaware, Ohio, specializes in the manufacture of Airo cushion goods, such products being used in the home, as well as in factories, offices and hospitals, and for camping purposes. C. T. Thompson is vice-president of this organization, which was established in 1908.

Lieutenant Max F. Moyer, for the past four years district manager of balloon inspection and production for the United States Army in Akron, has resigned his commission to accept a position in the Goodyear Tire & Rubber Co., sundries department at Akron, Ohio.

Henderson Brothers & Co., Inc., 60 Beaver street, New York, N. Y., brokers in crude rubber, announce the opening of an office, effective August 1, at 228-9 Ohio street, Akron, Ohio. A private wire will connect the Akron and New York offices.

The Thermo Instrument Co., specializing in the manufacture of indicating, controlling and recording instruments, recently moved from 1025 South High street to a new factory building at 572 High street, Akron, Ohio.

All employees of the Goodyear Tire & Rubber Co., Akron, Ohio, have been given an opportunity to contribute to a fund to erect a bronze tablet as a memorial to the late George M. Stadelman, former president of the company, who died suddenly in January. The tablet will be placed in the men's community room at Goodyear Hall, Akron.

C. T. Morledge, formerly assistant sales manager of the American Tire & Rubber Co., has resigned to accept a position with the India Tire & Rubber Co., where he will do special sales work at Akron.

G. B. Work, president of The B. F. Goodrich Co., Akron, Ohio, who sailed for Europe, July 17, expressed the opinion that the last half of the year should be considerably better than the first half. "Goodrich plants are running on a normal schedule, which I expect to continue for some time," he declared. "While unseasonable weather slowed us up the first half of the year, our sales are now running about the same as at this time last year. Our inventories are not excessive, and are not as large as they were at the close of last year, when they were about \$40,000,000. From the general outlook, I expect the tire business from now on to be as good as it was last year. The majority of tire dealers are carrying very low stocks."

The Lancaster Tire & Rubber Co., Columbus, Ohio, announces that its sales during June were the largest in the company's history. The output of the plant has been doubled, while the factory is operating day and night. The organization also announces the production of a new series of truck and motorbus tires, designed especially for carrying heavy loads. O. H. Williams, president of the company, recently returned from a trip through the West and Midwest where he found business conditions most encouraging.

The Mason Tire & Rubber Co., Bedford and Kent, Ohio, are operating at capacity. "We have had a gratifying sales increase and net earnings so far this year," states President W. A. Cluff. "The number of Mason dealers throughout the country has been practically doubled in the past year. With conditions in the tire market now improving, we have reason to expect a record breaking last half of the current year." The new Mason line of Hylastic balloon cord tires is proving increasingly popular. The specially developed cord fabric for these tires comes from the Mason textile plants.

Annual sales convention of the Mohawk Rubber Co., Akron, Ohio, will be held the third week in September in Akron, it is announced by J. F. Jones, sales manager of the company. It is planned to entertain the hundreds of dealers and salesmen attending for two days at the Glen Rock Country Club, at Twinsburg, following a series of conferences and factory trips at the Akron plant. According to Mr. Jones, sales for the first six months of the year showed a gain of more than 40 per cent over business for the corresponding period of 1925. Gross sales for the first five months were \$2,800,336, against \$1,959,516 for the same period in 1925.

The Eclat Rubber Co., Cuyahoga Falls, Ohio, has decided to discontinue the production of inner tubes and specialize in the manufacture of mechanical rubber goods. Charles R. Hall is sales manager.

The Studebaker-Wulff Rubber Co., Wadsworth, Ohio, has been sold to S. C. Durling for \$25,000, being the highest of two bids. Durling is not expected to operate the plant, but will offer it for sale.

The Columbus Tire & Rubber Co., Columbus, Ohio, plans to increase its present output of 500 tires to 600 or 700 daily. Inner tubes are also soon to be manufactured. A. Simons is president; John W. Zuber, secretary; while W. H. Hermann, of the Hermann Tire Building Machine Co., is general manager and treasurer.

The Triangle Tire & Rubber Co., Canton, Ohio, is operating at capacity, with an output of about 600 tires a day. The company is behind in orders, according to M. C. Wyatt, general manager.

Production during the present year of Polson-McWade puncture sealing tubes, manufactured by The Polson Rubber Co., 3902-3904 Carnegie avenue, Cleveland, Ohio, has been steadily increasing, making necessary the purchase of additional equipment. The output along other lines has also shown a substantial increase as compared with the production during 1925. H. B. Polson is president.

The Fidelity Tire & Rubber Co., Warren, Ohio, manufacturer of Ford size casings, has recently purchased the factory at Warren, formerly occupied by the Denman-Myers Cord Tire Co., and has discontinued operations at its Massillon, Ohio, plant. C. E. Pumphrey is sales manager of the Fidelity organization.

The Jeffrey Manufacturing Co., Columbus, Ohio, specializing in the production of elevating and conveying machinery, has elected Robert W. Gillespie as vice-president, assistant general manager, and a member of the company's board of directors.

#### Firestone-Liberia Plantations Progressing

Operations of the Firestone Tire & Rubber Co. in Liberia are progressing satisfactorily, said Harvey S. Firestone, Jr., upon his recent return to Akron from a six months' trip through the Far East.

"There were some minor difficulties in getting things started," he explained, "but these have been straightened out, and our original program is being followed. A new rubber growing project is necessarily a slow proposition, and it will take several years to establish the plantations."

In Mr. Firestone's opinion, it is possible for Americans to grow rubber on a large scale in the Philippines, if economic and political conditions are made favorable. Ample acreage is available and the climate is ideal, he asserted.

#### Balloon Tire Production Increasing

The adoption of low pressure tires as standard original equipment on all Ford cars has greatly stimulated balloon tire production in the Akron district. Approximately 55 per cent of the total output of the rubber companies now consists of balloon tires, and this ratio will be increased, as the motor industry is rapidly nearing the 100 per cent balloon tire basis.

Although high pressure cords are still an important factor, changeovers to balloon equipment are being rapidly made as fast as the old tires are worn out. Goodrich, Goodyear, Firestone, and Miller companies, which handle the bulk of the Ford original equipment business, are increasing their balloon tire production.

Most of the larger rubber companies are developing a line of balloon tires to fit both drop center and regular automobile rims. The Ford Motor Co. is furnishing this type of rim as optional equipment, and other manufacturers are considering its adoption. Drop center tires and tubes for Fords are produced in considerable quantities by the Firestone Tire & Rubber Co. in Akron.

#### Midwestern Notes

The Mid-States Rubber Co., 1400 Morgan avenue, Evansville, Indiana, a subsidiary of the Never-Split Seat Co., is engaged in the manufacture of Evernu hard rubber closet seats, and also a few lines of both soft and hard rubber goods. The company has recently been building a small addition to its plant. George A. Cunningham is secretary and treasurer.

Sales during the second quarter of 1926 by The Merit Tire & Rubber Co., Indianapolis, Indiana, represent an increase of 105 per cent over those for the first quarter. The company recently placed on the market a new type of Merit cord tire. C. H. LaFleur is director of sales.

C. E. Turnbull has been appointed as assistant to one of the district managers of the Hood Rubber Products Co., Inc., Watertown, Massachusetts, his territory covering the western section of the country. J. H. Powers has also been placed in charge of the company's Omaha branch, while L. J. Culp has been made manager of the division at Des Moines, Iowa.

The Crown Rubber Co., Omaha, Nebraska, has taken over the factory, also in Omaha, formerly occupied by the Sprague Tire & Rubber Co. Tires and tubes will be manufactured by the new organization which is headed by George M. Tunison, also president of the Overland Trail Co., another Omaha concern. Other executives of the Crown company include: C. A. Hammond-Knowlton, vice-president; Dwight Williams, secretary and treasurer; and Wade E. Sheppard, superintendent.

#### President of Corduroy Tire Co.

L. Adam Brown, the president of the Corduroy Tire Co., Grand Rapids, Michigan, has throughout most of his business career been associated with the rubber industry. Born in Pottsville, Michigan, on April 27, 1882, he was educated in the schools of Nashville, Michigan, and after three years with the Alabastine Co. he became connected in 1908 with the Continental Caoutchouc Co., while the year following he was appointed western sales manager for the United States Rubber Co., with headquarters in Kansas City, Missouri. In 1917 Mr. Brown was appointed vice-president and general sales manager of the Mid-Continent Tire Co., Wichita, Kansas, and in 1919 he removed to Grand Rapids, Michigan, where he established the Grand Rapids Tire & Rubber Corporation, which concern since April, 1923, has been known as the Corduroy Tire Co.



L. A. Brown

The Corduroy company has met with continued success in placing its goods upon the market, although the steady development of the organization has been in large measure due to the foresight and business ability displayed by Mr. Brown. While keenly interested in his factory operations Mr. Brown is also a lover of outdoor sports, and is a member of the Peninsular Club and the Cascade Hills Golf and Country Club, both of Grand Rapids. His country home is at Alto, Michigan.

#### The Rubber Trade on the Pacific Coast

Summer trade conditions on the Pacific Coast closely approximate the high level of mid-spring and are substantially better than a year ago. Agricultural activities, being further advanced by favorable weather, have helped to make business good, and the rubber industry is enjoying a fair share of the general prosperity. Tire makers and dealers are divided in opinion as to the effect of the 10 to 25 per cent tire cut recently announced by eastern manufacturers. The cut is welcomed by many as a stimulus to lagging markets, but others regard it as unnecessary, as eventually the hand-to-mouth buying of the over-careful dealers would soon cure itself if the leading tire makers would concertedly make it clear that a shortage is likely and that low prices can not long

continue. At any rate, rubber concerns are confident that with new economies in manufacturing and more aggressive merchandising they can hold their own in the strenuous competition.

The Universal Rubber Manufacturing Co., 938-958 Harrison street, San Francisco, California, of which George M. Stevens is president, reports that for the six months ended July 1 sales showed a big increase over the first half of 1925. The company has contracted with several of the largest printing concerns on the Coast to handle all their rolls, and is exporting printers' rolls and rubber specialties to many foreign countries. The company also manufactures belting, hose, and molded goods, and is working on several novel rubber articles that will be placed on the market when patents are granted.

The Goodyear Tire & Rubber Co., the Samson Tire & Rubber Corp., the Cactus Manufacturing Company, all of California, and the India Tire & Rubber Co., Akron, Ohio, will exhibit rubber products at the Industrial and Trade Exposition to be held August 16 to 22, inclusive in the Shrine Auditorium, Los Angeles, under the auspices of the Chamber of Commerce.

R. A. Wurzburg, president, and R. H. Brown, superintendent, of the Columbia Tire Corp., Portland, Oregon, recently visited the leading cities of California, and added many names to the company's list of dealers. The plant, said to be one of the finest of its size in the country, is working on full time and utilizing all its mechanical resources. J. F. Cullen, factory superintendent of engineering, has invented a non-skid mold cutting machine.

H. B. Gerrard has been appointed manager of the India Tire & Rubber Co.'s new branch in Seattle. The Akron company has had flourishing branches for several years in San Francisco and Los Angeles.

The Lee Tire & Rubber Co., Conshohocken, Pennsylvania, has moved its Fresno branch to 2121 Merced street. V. R. Lehnberg is the new manager.

Rubber has figured largely in the promotion of the Multnomah County fair to be held August 3 to 8 near Portland, Oregon. Ten immense orange-colored rubberized fabric balloons made in Akron, and suitably inscribed, were attached to the tallest buildings in the city and proved an effective advertising device.

R. J. Cope, southwest branch manager for the Firestone Tire & Rubber Co., Akron, Ohio, and resident in Los Angeles, spent several days early in July visiting trade in the San Diego section.

The General Tire & Rubber Co., Akron, Ohio, has established a factory warehouse in Phoenix to provide for Arizona distribution.

In celebration of its sixth birthday, the California Goodyear factory in Los Angeles recently produced its 6,679,689th tire, it being of the large bus balloon type lately added to the Goodyear family. It was presented by H. B. Barron, division production superintendent, to J. K. Hough, manager tire sales.

Adolf Schleicher, president of the Samson Tire & Rubber Corp., Los Angeles, California, recently returned from a trip to Europe. He brought back with him a secret German formula for rubber compounding which, it is said, will produce casings lower in price than other leading makes. While in London Mr. Schleicher had several conferences with H. Eric Miller, leading figure in the British rubber plantation industry, and he visited many rubber works in England and the continent. Incidentally the Samson factory is preparing for a considerably increased output.

The United States Rubber Co. reports a very satisfactory increase in business through all Pacific Coast branches during the past month, a particularly good showing being made in San Francisco territory. The company will shortly move its Phoenix, Arizona, headquarters from West Adams street to a new building to be erected for it on North First avenue.

Paper-makers' rubber-covered rolls are in strong demand according to the American Belting & Hose Co., 175 East Water street, Portland, Oregon, which makes a specialty of such products.

Sales of general mechanicals are also excellent, it is stated. C. R. Griffith is president.

To a substantial revival in the oil and mining industries and well-sustained activity in building and other construction lines, The B. F. Goodrich Co. attributes a marked increase of late in sales of hose, belting, and general rubber mechanical goods. H. M. Bacon was recently appointed manager for the Pacific Coast district, which extends as far east as Denver. Mr. Bacon will have his headquarters in San Francisco.

Working 24 hours every day, one of the busiest rubber concerns on the Pacific Coast is the E. M. Smith Co., 618 Clarence street, Los Angeles, California. E. M. Smith is president and W. G. Smith is secretary and treasurer. The company has just installed four more large mills and four extra size presses, and will continue to add to equipment so that its production capacity will be doubled within two months. The output includes elevator, conveyer and transmission belting, brake blocks, and general mechanical rubber goods. The West Coast Asbestos Co., Downey, California, a subsidiary of the E. M. Smith Co., is now one of the largest producers of brake lining in the country and is operating on three shifts daily.

Superintendent H. E. Blythe of the Goodyear Tire & Rubber Co., Los Angeles, California, is visiting Europe on business with Production Superintendent William Stevens of the parent Goodyear concern in Akron. E. L. Falls, manager of sales promotion and advertising, was a delegate to the recent convention of Pacific Coast advertising men at San Francisco. Mid-July daily production at the Los Angeles plant averaged 6,200 tires and 5,600 tubes. It was noted that July sales were considerably quickened by the recent cut in tire prices by the Goodyear companies.

A. F. Osterloh, vice-president and general manager of Goodyear Tire & Rubber Company of California, Los Angeles, California, is president of the Industrial Foundation of America, a new enterprise in which the directors are all connected with the Los Angeles Chamber of Commerce. The capital stock consists of \$6,000,000 common and \$6,000,000 preferred shares. The purpose of the concern is to make dividend-paying concerns of going or projected manufacturing and merchandising concerns having merit. The stock or securities of such concerns will be bought or underwritten, or capital provided.

The Keaton Tire Co., Inc., is a new organization, formed for the purpose of distributing throughout the Northwest the high pressure, balloon, truck and bus tires manufactured by the Keaton Tire & Rubber Co., 636 Van Ness avenue, San Francisco, California. The new retailing division which makes its headquarters at 460 Morrison street, Portland, Oregon, with offices also at 725 Virginia street, Seattle, Washington, includes the following officials: C. C. Jack, general manager; Ray F. Van Slyke, secretary and treasurer; and Wallace T. J. Powers, vice-president.

The Mason Tire & Rubber Co., Kent, Ohio, has opened a direct factory branch at 1236 Van Ness avenue, Fresno, California, with Funk & Petterson as the distributing agency. The organization reports a satisfactory demand for the company's Hylastic cord tires.

D. M. Kershner has been appointed district sales manager for the Lancaster Tire & Rubber Co., Columbus, Ohio, his territory covering the inter-mountain states, with headquarters at Denver, Colorado.

The Miller Rubber Co., Akron, Ohio, announces that a full line of its tires is being handled in Portland, Oregon, where Charles North will act as manager of a new and well-equipped establishment.

DURING APRIL AMERICAN EXPORTS OF SOLID TIRES WENT CHIEFLY to the following countries: Australia, 1,240, value \$66,477; United Kingdom, 1,571, value \$54,523; Cuba, 854, value \$36,883; Argentina, 556, value \$25,350; New Zealand, 374, value \$20,123; and Japan, 613, value \$13,781.

## The Rubber Trade in Canada

Quite a substantial reduction has been announced in Canadian tire prices averaging from 9 to 20 per cent, applicable to all grades and sizes of tires and tubes, effective July 14.

The reduction in prices of mechanical rubber goods, effective July 2, however, represents a decline of from 5 to 15 per cent approximately. Garden and lawn hose have not been included in the new price schedule and remain at old prices. First and second grades of rubber belting are approximately 10 per cent lower, and lower prices are quoted on square spiral packings. Sheet packings on full roll lots and in lesser quantities are about 10 per cent lower and have been put on a different basis. Formerly large buyers benefited by a special concession, now this has been abolished and a straight price per roll is in effect allowing the small purchaser to buy on practically the same basis as the larger one. Tubing prices are also lower, and friction tape shows a decrease of 3 cents per pound lower than formerly. A steadier tendency in the crude rubber market and the fact that American manufacturers are lowering their prices are given as reasons for price declines.

Toronto dealers are complaining that sales of garden and lawn hose have been slow owing to cool wet weather, and hose has been offered at cut prices. However, with seasonable weather stocks will move quickly. This condition is pretty general throughout Quebec and the Maritime Provinces. The demand for tennis shoes has been good, particularly sneakers for boys and children.

The new Conservative Ministry of the Right Hon. Arthur Meighen, Premier of Canada, that was recently sworn in before Governor General Lord Byng at Rideau Hall, Ottawa, included the Hon. E. B. Ryckman as Minister of Public Works. Mr. Ryckman is president of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario, and has represented the constituency of East Toronto in the House of Commons. He was elected at the general election of 1921 and reelected in 1925. The appointment is a particularly pleasing and popular one.

F. E. Partridge, vice-president and general manager of the Lee Puncture Proof Tire Co., Lachine, Quebec, and former president of the Partridge Rubber Co. Ltd., Guelph, Ontario, has been associated with the rubber industry for many years, and in 1925 was president of the Rubber Association of Canada. Additional equipment is being installed in the Lachine factory in order to increase production and to manufacture the full line of Lee tires.

The branch of the Dominion Rubber Co., (Maritime) Ltd., Halifax, Nova Scotia, was removed recently from Hollis street and is now at 156 Granville street, in a block where so many rubber goods houses are located that this section might well be called Rubber Trade Row.

The Toronto office of the Kaufman Rubber Co., Ltd., Kitchener, Ontario, of which Leonard B. Hutchison is manager, is being removed from 230 to 185 Bay street where considerable increased space and better facilities are available for handling the Toronto end of the business.

The Columbus Rubber Co., Ltd., Montreal, is featuring Columbus outing shoes in farm papers under the direction of G. H. Nickel, advertising manager.

Robert Gall, 156 Markham street, Toronto, Ontario, is Canadian representative for Airubber Corporation, Kingsbury and Superior streets, Chicago, Ill., manufacturer of rubber cushions, floats, mattresses, pillows, hot water bottles, brief bags, etc.

A. E. Tyler, manufacturer's agent with office at 454 King street West, Toronto, Ontario, is exclusive distributor throughout Canada for the Virginia-Carolina Rubber Co., Inc., Richmond, Virginia, manufacturer of Va-car self-vulcanizing patches.

Among those attending the annual convention of the Canadian Credit Men's Trade Association held in Vancouver, British Colum-

bia, July 12 to 15, was F. A. Todd of the Dominion Rubber Co., Ltd., Montreal.

In order to spread the gospel of safety, the Province of Quebec Safety League will hold one meeting each month in some industrial plant whose owners realize the value of safety education. The first meeting was held at the plant of the Columbus Rubber Co., Montreal, Ltd. This company has for some years maintained a first aid department and has had no serious accident in its factory for six years.

E. L. Kingsley, manager of the North British Rubber Co., Toronto, Ontario, and Mrs. Kingsley are on a trip to California, returning by the way of Victoria, Vancouver, Banff, Calgary, and Winnipeg. While away Mr. Kingsley will combine business with pleasure, his company having many golf customers in this territory.

Automobile tires for one dollar down is the latest scheme and five of the largest Canadian tire companies are said to be carefully testing this new method of merchandising tires. The plan at present is only in its experimental stage, but the number of dealers operating it is rapidly growing. Toronto, Hamilton, Ontario, and Windsor, are trying out this plan, while in Vancouver, British Columbia, it has been most successfully put over.

Silvertown tires are being advertised by the Canadian Goodrich Co., Ltd., in Montreal through billboards in prominent locations, and emphasizing the fact that they are now made in Canada.

Fred S. Cameron, well-known in the tire trade of Vancouver, has organized the Cameron Tire Co., 1046 Richards street, Vancouver, British Columbia, tire distributors. A modern equipment for repairing balloon and high pressure tires has been installed.

D. W. Munro, Brandon, Manitoba, has opened a modern tire repair shop under the name of Munro's Tire Service. The plant is equipped to handle all kinds of tire repairs from motorcycle to the large sized balloon tires.

Increased production of automobiles, trucks, and commercial cars during the month of May, 1926, is reported by the Automotive Industries of Canada, Toronto. The total production of Canadian plants during the month was 23,186, nearly 5,000 more than in May, 1925, and more than 3,000 in excess of production in April, 1926. Production of trucks and commercial cars has practically doubled during the first five months of this year as compared with the same period last year. Twenty thousand motor cars were produced in Canadian plants in one month for the first time in the history of the industry.

## The Goodyear Cotton Co. of Canada, Ltd.

The Goodyear Cotton Company of Canada, Ltd., St. Hyacinthe, Quebec, is a new division of The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Operations are being carried on at the Canadian factory with a three shift schedule, the plant running approximately 22 hours a day. New machinery is also being installed, bringing factory equipment up to about 20,000 spindles. With the installation of this equipment the Goodyear Tire & Rubber Co. of Canada, Ltd., of which the cotton mill is a subsidiary, will be getting from its own mill more than half of its tire fabric requirements. J. D. Goodreault is superintendent.

DURING THE FIRST THREE MONTHS OF 1926 THE UNITED STATES exports of automobile casings numbered 418,287, as compared with 400,380 for the corresponding period of 1925. Similar shipments from other manufacturing countries were for the 1926 and 1925 quarters respectively: Canada, 284,410 and 193,452; United Kingdom, 191,095 and 198,115; France (estimated), 494,502 and 495,000; Italy (estimated), 192,310 and 180,580; and Germany 70,898 and 30,889. It will be noted that with the exception of slight declines in British and French exports all the countries mentioned show an increase in their tire trade.

# The Rubber Trade in Europe

## Great Britain

### The Future of the Rubber Industry

THE world continues its increasing consumption of rubber, notwithstanding recent constant efforts toward conservation, the use of rubber reclaim, and occasional intermittent attempts to produce synthetic rubber which will prove satisfactory in all respects. Because if the motor industry pursues its astonishing course of development the rubber industry must perforce continue to grow also. Some interesting statements along this line appear in *The Financial News Rubber Manual and Directory, 1926*, from which the following is quoted:

The immediate future of the rubber industry is bound up with the motor vehicle; and the key to that future lies in the answer to the question: Will the production of motor vehicles in the United States continue in the next few years to increase at anything like the rate at which it has grown during, say, the past five years? Last year the United States used up 360,000 tons of crude rubber, of which 296,986 tons, or 82.5 per cent of the whole was used in the manufacture of tires of one kind or another. The rate of increase in the production of motor vehicles in the United States during the first two months of this year as compared with the corresponding period of 1925 was just under 40 per cent. At this moment motor vehicles are being produced in the United States at the rate of more than 4,000,000 a year; and it is estimated that the cost of renewing tires on the existing motor vehicles in the States this year will not be less than £120,000,000, assuming that the price of crude rubber remains about the present figures.

A check will undoubtedly come to this remarkable rate of growth in motor vehicle construction. After all, American farmers are not unlimited in number; and the hole must fill up in time if you keep on dumping into it. The check will come because it will not be possible to find accommodation for the cars. On the other hand, American car builders are only just touching the fringe of the immense field that extends beyond their own frontiers.

The general conclusion as to the immediate future of crude rubber, which seems to follow from a careful survey of the whole field, is that consumption and production will run a close and sometimes possibly an exciting race, with consumption usually in front, right on to 1930 certainly. Production will, however, follow pretty closely.

### World's Rubber Production and Consumption

In *The Financial News Rubber Manual and Directory, 1926*, are some interesting figures regarding rubber production and consumption, the rubber "horoscope" having been plotted as follows:

Year	Production Tons	Consumption Tons
1926	520,000 to 580,000	580,000 to 660,000
1927	580,000 to 665,000	660,000 to 725,000
1928	665,000 to 725,000	725,000 to 820,000
1929	725,000 to 790,000	820,000 to 900,000
1930	790,000 to 850,000	900,000 to 1,000,000

### British Rubber Imports and Consumption

The following tabulation shows the trend of the British rubber industry during recent years. It will be noted that the consumption of crude rubber by English rubber manufacturing interests has increased greatly since 1922, although it is not yet back to the abnormal 1919 level.

Year	Stocks January 1 Tons	Net Imports Tons	Total Available Tons	Stocks December 31 Tons	Approximate Consumption Tons
1919	*19,264	42,671	61,935	24,980	38,955
1920	24,980	56,844	81,824	55,672	26,652
1921	55,672	42,087	97,759	79,661	18,098
1922	79,661	11,724	91,385	81,081	10,304
1923	81,081	12,700	93,781	66,828	26,953
1924	66,828	11,550	55,278	32,425	22,853
1925	32,425	4,061	36,486	6,328	30,158

\*Stocks January 31, 1919.

## English Tire Tariff Proposed

Agitation for an import duty on automobile tires recently renewed in Great Britain, brings to mind that from 1922 to 1924 British tire manufacturers unsuccessfully tried to induce the government to bring tires under the McKenna duties, which apply to automobiles and parts except tires. One of the strongest proponents of the tire tariff is Colonel Sealy Clark, chairman of the British Institution of the Rubber Industry.

The British tire industry has been unable to make out a case for protection under the Safeguarding of Industries Act. The cause of the recent agitation seems to be an appreciation of the part played by tires and motor transport in ending the recent general strike, plus statistics of British tire imports which were much greater in value during the first quarter of 1926 than in the corresponding quarter of either 1924 or 1925. Also Michelin is establishing a British factory, indicating a belief on Michelin's part that a duty will eventually be applied to English tire imports. The greater value of tire imports this year is undoubtedly due in large part to the tire price increases which have been made effective, and it is likely that Michelin desires to secure preferential tariff on his products in British possessions.

### British Notes

At the annual meeting held June 10, 1926, of the India Rubber Manufacturers' Association, Ltd., the revised constitution of the association was submitted to the membership and adopted. On this occasion Sir J. George Beharrell, managing director of the Dunlop Rubber Co., Ltd., was elected chairman for the coming year, and R. T. Byrne deputy chairman.

Sir Henry Wickham's eightieth birthday, May 29, was observed in an interesting manner, he becoming at that time the recipient of a check from an American for £5,000, this amount having been contributed in recognition of the benefits American industry has derived from the work of the "Father of the Plantation Rubber Industry." Later another cablegram was received stating that an oil company desired to recognize Sir Henry's service to the oil industry by sending £1,000. The veteran rubber planter's reply was telegraphed back as follows: "Not being a mineral oil man, this latest act is most unexpected. I appreciate it greatly. Rubber, oil, and other key products of the earth are closely interdependent. May our two nations be so also."

The Rubber Shareholders' Section of the Institution of the Rubber Industry is issuing a useful and comprehensive directory of rubber planting companies, together with the names and addresses of their respective secretaries.

## France

Bordeaux has been for many years the port and market for African rubber from the French colonies. The rubber is distributed to the factories of Clermont-Ferrand, the Akron of France, and to foreign countries, very little remaining in Bordeaux for manufacturing purposes.

The amounts of rubber sold on the Bordeaux market during 1923, 1924 and 1925 were as follows:

	1923	1924	1925
Congo Grades.....	836,970	1,059,329	970,912
Conakry, Rio Nunez and Bissao.....	317,615	543,502	401,940
Sudan.....	4,070	8,059	11,003
Ivory Coast.....	32,519	52,374	178,792
Cameroon.....	162,372	317,815	370,121
Gabon.....	27,197	100,756	98,295
Madagascar.....	.....	.....	1,150
Total kilos.....	1,380,743	2,081,835	2,032,213

The amounts of balata sold were 26,690 kilos in 1923, 61,120 kilos in 1924 and 74,155 kilos in 1925. Exports of African wild rubber

to America from Bordeaux during the first quarter of 1926 came to 480,366 pounds, value \$323,851.

It is interesting to note that the cooperation of French government authorities, rubber-collecting organizations and Bordeaux traders has effected an improvement in the quality of African rubber shipped to Bordeaux.

### Austria

Statistics of Austria's trade in rubber during 1924 and 1925 show that imports of crude and waste rubber totaled 22,086 quintals in 1924 and 24,497 quintals in 1925. Imports of rubber dough fell from 2,613 quintals in 1924 to 103 quintals in 1925, at the same time exports of this article increased from 703 quintals to 763 quintals. Rubber thread imports rose from 587 quintals value 880,000 schilling, to 844 quintals, value 1,094,000 schilling. In 1925 Austria imported footwear to the amount of 931 quintals, value 930,000 schilling, but at the same time exported 5,749 quintals, value 6,612,000 schilling. Exports of soles and heels for the same year came to 6,431 quintals, value 3,535,000 schilling. Other important items of export were hose (2,270 quintals, value 1,430,000 schilling in 1924 and 2,652 quintals, value 1,332,000 schilling in 1925), packing (6,747 quintals, value 2,861,000 schilling in 1924 and 7,096 quintals, value 3,797,000 schilling in 1925). Rubber toys, for which Austria is famous and which therefore figure prominently in the statistics, fell in 1925, having been 4,387 quintals, value 3,103,000 schilling against 6,365 quintals, value 2,696,000 schilling, that is a considerable decrease in quantity which, however, seems to have been more than made up for by the increase in value.

Imports of automobile casings in 1925 were 2,510 quintals, value 2,485,000 schilling, and exports 538 quintals, value 448,000 schilling; imports of tubes came to 708 quintals, value 693,000 schilling and exports 105 quintals, value 102,000 schilling. Solid tires show an increase from 1,663 quintals, value 563,000 schilling in 1924 to 2,182 quintals, value 688,000 schilling in 1925 as compared with a decrease in exports from 1,044 quintals, value 353,000 schilling in 1924 to 920 quintals, value 485,000 schilling in 1925.

On the other hand imports of rubberized fabrics declined from 1,453 quintals to 1,080 quintals, whereas exports more than doubled, having risen from 1,295 quintals to 2,895 quintals in 1925. Elastic fabrics, webbing and articles thereof were: imports 678 quintals as compared with 671 quintals and exports, 1,392 quintals instead of 1,016 quintals.

On the whole the figures show a slight increase in both imports and exports of manufactured goods and also a small increase in the imports of crude rubber.

### Germany

Conditions in the German rubber industry which had reached a particularly low point towards the end of 1925 seem to be improving, but it is painfully slow and especially trying after the sudden upward and downward movements hitherto characteristic of the post war period. However, it is hoped and believed that this very slowness is a proof that good times when they once more come around will be of a more enduring nature and rest on a healthier basis than has been the case in these last years.

The critical state of affairs which was particularly pronounced towards the end of last year is largely reflected in the company reports just issued. To be sure, most companies have been going through an anxious time for some years now, but 1925 seems in many cases to have brought matters to a head. Many concerns of standing have either distributed a minimum dividend or none at all. In some instances this was done as a measure of precaution, but often enough the condition of the firm did not permit it. Several old-established firms find themselves involved in financial difficulties and in the most favorable instances they have had to reorganize their capital.

However, a slight improvement, more pronounced in some industries than in others, has been noted. Thus the insulated wire

and cable industry reports increased orders, and plans to cut down working hours have consequently been abandoned for the most part. Prices have largely remained unchanged.

On the other hand the bicycle tire business reports that large quantities of inferior tires of foreign make have appeared on the market at cut-throat prices and without guarantees, while the condition of the footwear export market is considered critical.

### German Footwear Exports Decline

Statistics for the four months ended April, 1926, show that German exports during that period totaled 62,311 quintals against 49,758 quintals in the first four months of 1925. But footwear exports dropped from 178,800 kilos in the four months of 1925 to 86,900 kilos in 1926, a decrease of over 50 per cent. These figures compare with 748,900 kilos for the year 1923, 458,500 kilos for 1924 and 448,000 kilos for 1925. If exports for the year 1926 continue at the same rate as during the first four months, the figures for the year will be only some 260,000 kilos or 34 per cent of the record exports for 1923.

The chief markets for German rubber footwear are the Baltic States: Finland, Esthonia, Lithuania and Latvia where, after the crisis of 1924, the demand for rubber footwear became very active. But in the meantime Finland, England and America and, to a certain extent, Russia and Sweden, have turned their attention to the Baltic States and Germany has been pushed into the background as supplier of footwear to these parts.

The total German exports of footwear to these states in the first four months of 1926 came to about 53,000 kilos, or only 40 per cent of the exports for the same period in 1924 and 30 per cent of the corresponding period of 1923. Finland, which three years ago took 28 per cent of the total German rubber footwear exports, has of late become so insignificant a market that it will no longer be listed separately in the statistics. Esthonia, Sweden and Denmark have also become unimportant as customers of German footwear, only Lithuania and Latvia continuing to import these goods in the usual amounts from Germany.

### New Rubber Goods

It seems that in certain cases rubber carpeting has been found lacking when compared with heavy woven carpets, the complaint being that it is not as soft underfoot as the latter. To remedy this, rubber carpeting for special purposes is now produced with a layer of sponge rubber on the under side. These carpets are 7 to 8 mm. (about 1/8-inch) thick of which more than half is accounted for by the sponge rubber layer.

The firm of Carl Laat, Köln-Nippes, has patented a process for producing shirred and crinkled effects on the surface of thin rubber sheet. This effect is used decoratively on the otherwise plain, smooth surfaces of bathing caps, covers, aprons, hats, caps, bathing shoes, etc. A kind of quilted appearance is obtained when the lines of crinkling cross each other. The lines produced in the process of shirring are of a different color from the rest of the rubber, which adds to the decorativeness of the treatment.

Gummiwerk Union Carl O. Witthauer, Neustadt b. Koburg, makes entire outfits of thin sheet rubber for dolls. These outfits include shirts, drawers, dresses, etc., and have the advantage that they may be washed without being damaged.

### Fall in Crude Rubber Imports

German crude rubber imports for the first quarter of 1926 show a marked falling off when compared with those for the first quarter of 1925, the figures being 11,134,000 kilos in 1925 and only 3,801,000 kilos in 1926, or about one-third the amount of the previous year. Declines are also noted in gutta percha (39,000 kilos against 56,000 kilos), balata (97,000 kilos against 133,000 kilos), scrap rubber (712,000 kilos against 2,582,000 kilos). At the same time exports of scrap show a noteworthy increase, 11,709,000 kilos for the first quarter of 1926 against 167,000 kilos in 1925.

# The Rubber Trade in the Far East

## Ceylon

THE Rubber Controller for Ceylon reports that on December 31, 1925, the number of registered estates of 10 acres and over was 4,510 and of those under 10 acres, 29,736, making 34,246 in all against 28,682 estates registered on December 31, 1924. The 4,510 large estates covered an area of 418,908 acres and the 29,736 small estates, 48,522 acres, giving a total of 467,430 acres. The area of the 28,682 estates registered at the end of 1924 totaled 461,025 acres, which shows an increase in acreage of 6,405 for the year 1925.

## Rubber Exports

Ceylon exports of crude rubber for May were 3,693 tons, while the permissible exports for the month were 5,720. A review of the exports since the beginning of the fourth restriction year shows that in no month has Ceylon exported her full quota, in fact the last two months show a sharper decline than ever.

1925	Per Cent of Release	Permissible Exports Tons	Actual Exports Tons
November.....	85	4,860	4,080
December.....	85	4,860	4,641
1926			
January.....	85	4,860	4,246
February.....	100	5,720	5,120
March.....	100	5,720	5,177
April.....	100	5,720	3,766
May.....	100	5,720	3,693

It will be noted that the sudden decline in exports coincides with the fall in the price of rubber, which seems to confirm the opinion expressed that the chief factor influencing Ceylon output is the market price. Certainly the chance of Ceylon filling her quota for the current year does not seem to be very favorable.

## Malaya

A report of Lewis & Peat, Singapore, dated June 4, states: "Prices all along the line show a decline on last week's lowest quotations, and the tendency is still downward. As expected, the London stocks show a considerable increase of 1,150 tons."

## Singapore Rubber Prices

Prices during that week had touched the lowest point since the phenomenal fall following the equally phenomenal rise of rubber and those who were not prepared for a passing of boom times look back with regret and surprise at the years 1924 and 1925, more particularly the latter, which witnessed the upward swing of rubber. Quotations in 1924 were low enough to be sure, dropping to 31 cents (Straits currency) during May, but after that the rise took place, first slowly and steadily, and then in May, 1925, just one year after the record low of 31 cents had been reached, rubber suddenly soared to over a dollar a pound.

The following table demonstrates the trend of the market during 1924 and 1925. Prices, quoted in Singapore, are in Straits currency per pound.

	1924			1925		
	High	Low	Average	High	Low	Average
Jan. ....	.50	.47½	.48½	.68¾	.58¾	.62
Feb. ....	.48½	.46½	.47½	.65¾	.58¾	.61965
Mar. ....	.47	.39¾	.42¾	.74	.65	.68
Apr. ....	.43½	.41	.42½	.78¾	.69¾	.7358
May ....	.41½	.31	.35½	1.07	.74¾	.98
June ....	.36½	.32½	.34½	1.29½	1.06½	1.15½
July ....	.43¾	.33¾	.39	1.78	1.26½	1.56
Aug. ....	.47¾	.42¾	.46½	1.42	1.11½	1.242
Sept. ....	.51½	.46¾	.49	1.33½	1.18½	1.28¾
Oct. ....	.60½	.51	.56½	1.68	1.33	1.54
Nov. ....	.62¾	.58¾	.60 3/10	1.81½	1.59	1.70½
Dec. ....	.68½	.62¾	.65¾	1.83	1.45	1.6684

## Malayan Exports and Imports

Figures of exports from Malaya now show the amount of release and the permissible exports beside the quantities actually shipped, thus affording opportunity to judge to what extent Malaya will fill her quota of exports for the current year.

From figures already published since the beginning of the fourth restriction year commencing November 1, 1925, the following table has been compiled:

1925	Release Per Cent	Permissible Exports Tons	Actual Exports Tons
Nov. ....	85	20,882	25,322
Dec. ....	85	20,882	21,689
1926			
Jan. ....	85	20,882	17,117
Feb. ....	100	24,567	22,232
Mar. ....	100	24,567	24,610
Apr. ....	100	24,567	17,514

The April exports do not include 4,175 tons afloat in the harbor, declared for export in May. The above figures cover restriction area only and therefore do not include shipments of rubber grown in Singapore and Penang.

There was a carry-over of 5,878 tons of rubber not exported at the beginning of the fourth restriction year. By "carry-over" is meant export permits issued to exporters but not utilized. At the end of April the carry-over came to 19,097 long tons. Exporters are allowed to use carry-overs in subsequent quarters, and as production varies seasonally on different estates, this enables planters to average their output over the year.

## Rubber Latex and Gutta Percha Shipments

The following table shows that shipments of latex increased very considerably during 1925 as compared with 1924. Most of the output went to America:

	1924		1925	
	Gallons	Value U. S. Currency	Gallons	Value U. S. Currency
United Kingdom.....	16,342	\$17,241	48,392	\$72,344
British Possessions....	67	88	108	247
Europe .....	147	96	877	1,641
America .....	694,378	549,996	2,264,282	5,755,111
Japan .....	3,618	3,146	1,780	2,125
Totals.....	714,552	\$570,567	2,315,439	\$5,831,468

Figures of exports of gutta percha and gutta inferior are now available and from these it is seen that during 1925 total exports of gutta percha fell to 1,807 tons from 2,865 tons in 1924. In 1925, 911 tons were sent to United States and 742 tons to England. At the same time exports of gutta inferior rose from 5,843 tons in 1924 to 6,621 tons in 1925, of which America took 6,323 tons, Europe 193 tons and England 28 tons.

In the table below are given the Malayan imports and exports (including re-exports) of gutta percha and rubber-like gums during 1925.

	IMPORTS		EXPORTS	
	Long Tons	Straits Dollars	Long Tons	Straits Dollars
Gutta Percha.....	2,377.89	\$2,349,042	1,807.11	\$3,226,831
Gutta Inferia.....	5,517.69	1,647,508	6,621.63	2,934,552
Rambong.....	1,425.21	1,837,397	112.86	246,399
Borneo Rubber.....	.87	994	3.32	3,962
India Rubber.....	2.80	2,060	2.70	3,396

## Rubber Research

It has been officially announced that Dr. G. Bryce, D.Sc., now Director of Agriculture, Mandated Territory of New Guinea, has been appointed Director of the Rubber Research Institute of Malaya, and he is expected to assume duty in September. Dr. Bryce is a graduate of Edinburgh University. His first appointment (1907-1909) was as botanist to a commercial undertaking in Abyssinia in connection with forest survey and regen-

eration of certain species of *Landolphia*. He held a similar appointment in Madagascar and West Coast of Africa from 1910-1912. From August, 1915, to May, 1916, and from June, 1920, to April, 1921, he was government botanist and mycologist in Ceylon where most of his time was given to rubber research of an economic nature, seed selection, yields, growth of *Hevea*, manuring.

### Latex Stealing

There has always been a certain amount of latex stealing by natives from European estates, but of late thefts have become more numerous and more daring, so that continued complaints are heard on every hand. It is not only the loss of latex that is complained about but the thieves hack the trees, causing considerable damage.

### Netherlands East Indies

The director of the Central Rubber Experiment Station, Buitenzorg, has issued a report regarding preparation of rubber during 1925 from which certain interesting items are culled.

#### New Methods of Preparing and Packing Rubber

During 1925 a number of new methods were introduced. The use of formic acid instead of acetic acid, as a coagulant, made rapid headway so that by the end of the year under consideration, over 75 per cent of the estates had taken up formic acid, and further progress is expected in this direction during 1926. Progress with formic acid was rather slower in East Coast of Sumatra, nevertheless by the end of 1925 over half the estates were using it. The high prices ruling during the year were responsible for an increase in the proportion of acid used so as to obtain a transparent serum instead of the rather opaque or milky serum that had been found most economical in former years.

The new kinds of bisulphite (pyrosulphite) did not find much interest.

Aluminum coagulating vessels became very popular although several estates continued to use ebonite tanks.

Satisfactory results were obtained in tests with ball-bearing crèping-machines. Tests with other new machines, among others the Jaring machine and the Hoare multiple roller were undertaken. As for ordinary sheeting machines, the wide model suitable for preparing sheets of the same width as the cases is gaining more and more ground. The standard spiral pattern may be regarded as fairly general now.

Interest in improved packing methods weakened. However, estates which had been using mat-packing continued to use this and 1,600 tons were shipped in matting during the year.

With regard to special types of rubber, the sprayed rubber installation at Pasir Boengoer was almost completed in 1925, so that Java will export this kind of rubber for the first time in 1926. The number of spraying towers belonging to the United States Plantations Co. on Sumatra has been increased to six.

Exports of latex from East Coast Sumatra increased considerably during the year, the amount being 6,369 tons against 2,779 tons in 1924. Practically the entire quantity went to the General Rubber Co., only a few small orders being destined for Europe.

Sole crèpe continued to engage full attention in Sumatra where the output was regular and on a large scale as usual. But in Java interest weakened. At the best of times only about 60 tons were shipped by 9 estates of which only one produced sole crèpe regularly. The high price obtained for the usual grade caused most of these 9 estates to abandon sole crèpe altogether, for the present at least.

### Native Rubber

Native rubber came in for the usual amount of attention and numbers of samples were examined to gain an insight into the

moisture content and the physical qualities of the native product.

The most important figures regarding the loss after washing are as follows: Djambi, 50 per cent, South East Borneo, 40 per cent, Palembang (Sumatra), 30 per cent, and West Borneo, 20 per cent.

The ordinance covering the erection of factories for remilling native rubber has been before the Council for discussion. It provides that no factory of this kind may be erected without government permission; that no extensions of existing factories may be undertaken without government permission; that permits will determine the site of the factory, the number of tons of dry rubber that a factory may prepare annually, and in this connection, the capacity of the factory, measures which the manufacturer will have to take to prevent or limit danger, damage or obstruction; within what period of time a factory must be working to capacity.

Official figures of rubber exports from the Dutch East Indies show shipments, amounting to 22,039 long tons for March, 1926, against 21,272 tons for March, 1925. For the first quarter of 1926 total exports were 57,911 long tons, against 52,959 tons for the corresponding period of 1925.

The chief exporting centers and the amounts in metric tons, are given below:

	March		First Quarter	
	1925	1926	1925	1926
Java and Madura.....	4,657	4,933	11,306	13,947
Sumatra .....	12,390	12,956	32,107	34,144
Borneo .....	4,249	4,068	9,592	9,772
Celebes .....	10	17	38	40
Totals, metric tons.....	21,306	22,074	53,043	58,003

### New Latex Strainer

The usual method of straining latex is to pass it through a series of sieves from very coarse to very fine mesh. As the finer sieves are quickly clogged much time is wasted in cleaning them. All this is due to the fact that the latex spreads over the sieves in a thin layer which quickly coagulates.

A local planter has invented a new device which consists of a receiving trough and a long box connected with it in which the various sieves are so arranged that the latex moves upward from the coarsest to the finest sieve, instead of downward as in the usual strainers, and then out of the box by way of a downward sloping outflow attachment. The latex flows from below upward through the sieves instead of downward, and the sieves remain under latex throughout the straining process.

### Certificate Rubber

In the report of the Malang Experiment Station for 1925, mention is made of two estates which have shown a desire to prepare certificate rubber. In such a case, the experiment station keeps track of the entire process of preparation on the estate, gives suggestions for improvement and takes samples from lots ready for shipment if the preparation promises a uniform product. These samples are sent to the Central Rubber Experiment Station together with a report of the process of preparation. The samples are tested and where necessary modifications are recommended. One of the two estates has received a certificate, the other will have to introduce certain changes before its product can qualify for a certificate.

At present no premium is paid on this type of rubber, but it is hoped that it will be in demand for special purposes and later on will obtain a premium.

### SIAM

Exports of rubber from the West Coast of Siam and from Patani are at present about equal in amount. For the fiscal year ended March 31, 1925, the exports from each district are stated to have been between 25,000 and 30,000 piculs (picul = 133½ pounds), or about 1,500 long tons from each district.

# Rubber Patents, Trade Marks and Designs

## The United States

### June 8, 1926\*

- 1,587,519 Ring traveler. William Harrop, New Bedford, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.  
 1,587,571 Heel. Harry S. Willis, Philadelphia, Pennsylvania.  
 1,587,605 Swimming apparatus. Robert H. Scroggins, Oakmont, Upper Darby, Pennsylvania.  
 1,587,710 Canoe sponson. Anthony Fiala, Brooklyn, New York.  
 1,587,946 Recoil pad. Wiley G. Gibson, El Paso, Texas.  
 1,587,960 Teething ring. Hans G. Jorgensen, Erie, Pennsylvania.  
 1,587,997 Expandible armor plate tire protector. Amos A. Wyckoff, Oakland, assignor to Wyckoff Manufacturing Co., both in California.  
 1,588,019 Toilet seat. William A. Gitter, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.  
 1,588,031 Flexible coupling. Elmer G. Kimmich, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.  
 1,588,038 Golf tee. Thomas W. Miller, assignor to The Faultless Rubber Co., both of Ashland, Ohio.  
 1,588,046 Tire pop valve. Nels S. Nelson, assignor of one half to George A. Sutton, both of Pontiac, Michigan.  
 1,588,066 Supporter and protector. Edward J. Thorp, assignor to A. G. Spalding & Brothers, both of New York, N. Y.  
 1,588,080 Vacuum preserving device. Frederick V. Winters, New York, N. Y.  
 1,588,103 Container. Raoul Grimois-Sanson, Paris, France.  
 1,588,245 Cushion connection housing. Fred L. Lipcot, assignor to Rubber Shock Insulator Co., Inc., both of New York, N. Y.

### June 15, 1926\*

- 1,588,457 Tire valve. Edward E. Holt, assignor to Edward Holt Co., both of Chicago, Illinois.  
 1,588,481 Wheel disk. Hugh C. Lord, Erie, Pennsylvania.  
 1,588,487 Sponge rubber sheet. Thomas W. Miller, assignor to The Faultless Rubber Co., both of Ashland, Ohio.  
 1,588,625 Garter. Rossiter S. Scott, New York, N. Y.  
 1,588,785 Toothbrush with rubber vacuum cups. Robert H. Van Sant, Chicago, Illinois.  
 1,588,846 Nursing nipple. Lacie A. McGeary, assignor of one half to I. S. Morgan, both of Parkersburg, West Virginia.  
 1,588,874 Valve. Wertus Current, Belleville, assignor to Voorhees Rubber Manufacturing Co., Jersey City, New Jersey.  
 1,588,926 Paving and flooring. William A. Williams, assignor to The North British Rubber Co., Ltd., both of Edinburgh, Scotland.  
 1,588,936 Tire shield. James H. Burrow, Spokane, Washington.  
 1,589,024 Printing die. Harold R. Wade and Lee M. Harley, assignors to James H. Matthews & Co., all of Pittsburgh, Pennsylvania.  
 1,589,138 Nursing bottle. Clark F. Fisk, Camden, New Jersey, assignor, by direct and mesne assignments, of one sixth to Samuel H. Bell, Reading, Pennsylvania, one third to J. H. McNeal and one half to B-N-B Rubber Co., a corporation of Delaware.  
 1,589,301 Pneumatic tire flap. Jules Hauvette-Michelin, New Brunswick, New Jersey.

### June 22, 1926\*

- 1,589,470 Pressure indicator for pneumatic tires. Harry H. Hood, Chicago, Illinois.  
 1,589,479 Pneumatic tire valve. Frederick Myers, New York, N. Y.  
 1,589,611 Cushion connection for vehicle construction. Alfred F. Masury and August H. Leipert, assignors to International Motor Co., all of New York, N. Y.  
 1,589,661 Auxiliary tire. David Lewis Rennie, Pontrilas, Saskatchewan, Canada.  
 1,589,665 Rubber mounted printing plate. Julius Schmutz, assignor to Schmutz Manufacturing Co., Inc., both of Louisville, Kentucky.  
 1,589,670 Pneumatic stretcher. Karl H. Vartia, assignor of one third to Alf C. Kremer and one third to Jacob Maki, all of Butte, Montana.  
 1,589,677 Garter. Louis E. Bisch, New York, N. Y.  
 1,590,047 Boot. Frederick H. Martin, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.  
 1,590,151 Self inflating life belt. Adolphus Drapeau, River Rouge, Michigan.  
 1,590,152 Nursing nipple. Sylvain Dreyfus, Lausanne, Switzerland.  
 1,590,173 Football valve. Prosper Eugene Anglade, Marseilles, France.

\* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Chemical patents will be found on page 268. Machinery and Process Patents on pages 271-272

## June 29, 1926\*

- 1,590,205 Motor steering column bushing. Frederick H. Ragan, Detroit, assignor by mesne assignments to Gemmer Manufacturing Co., both in Michigan.  
 1,590,227 Nursing bottle support. Francis J. Britton, assignor of one half to Clara Gilmer, both of Brainerd, Minnesota.  
 1,590,282 Radio apparatus winding form. Charles C. Cadden and Harry Dewhirst, both of Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.  
 1,590,533 Resilient tire. Lemuel McKinnon, Salt Lake City, Utah.  
 1,590,568 Tire liner. Mike P. Finnegan, Newton, Mississippi.  
 1,590,668 Gas mask. Rosario Bello, Trenton, New Jersey.  
 1,590,691 Spring retarder. Henry Izard, Mobile, Alabama.  
 1,590,966 Pneumatic tire pressure gage with deflator. Gustave A. Duerler, Jr., San Antonio, Texas, assignor to A. Schrader's Son, Inc., New York, N. Y.

## July 6, 1926\*

- 1,591,050 Tire lock. Harold Cartwright Pierce, Pomona, California.  
 1,591,074 Life buoy. John Baldwin Adams, assignor to Bertram Egley, both of Wellington, New Zealand.  
 1,591,117 Golf ball. George G. Floyd, Riverside, Illinois.  
 1,591,210 Playing ball. John W. Brandt, Elyria, Ohio.  
 1,591,359 Radiocabinet. George W. Bulley, Akron, Ohio.  
 1,591,373 Acid proof drum. Richard T. Griffiths, assignor to The Miller Rubber Co., both of Akron, Ohio.  
 1,591,410 Vaginal syringe. Harvey I. Spang, Lebanon, Pennsylvania.  
 1,591,465 Tire flap. Richard S. Burdette, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.  
 1,591,579 Handball, punchball, etc. Niels Peter Thygesen, Copenhagen, Denmark.  
 1,591,605 Tire flap. William Beaney, New York, N. Y.  
 1,591,633 Tire. Andrew Lang, Edmonton, Alberta, Canada.  
 1,591,939 Pump with rubber facing. Noah W. Humphrey, Spokane, Washington, assignor to Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin.

## The Dominion of Canada

### June 8, 1926

- 261,464 Paving block. Rufus F. Herrick, Winchester, Massachusetts, U. S. A.  
 261,503 Tire. David Lewis Rennie, Pontrilas, Saskatchewan.  
 261,562 Cushion tire. The Lambert Tire & Rubber Co., Barberton, assignee of Wallace R. Gillam, Tallmadge, both in Ohio, U. S. A.  
 261,605 Storage battery container. The Willard Storage Battery Co., assignee of Carl J. Dunsweiler, both of Cleveland, Ohio, U. S. A.

### June 15, 1926

- 261,701 Inflatable toy. James Francis Mulholland, Columbus, Ohio, U. S. A.  
 261,741 Elastic webbing. The Ansonia O. & C. Co., assignee of George E. Clausa, both of Ansonia, Connecticut, U. S. A.

### June 29, 1926

- 262,146 Hair protector. Della Clarke Sullivan, New York, N. Y., U. S. A.  
 262,226 Sport ball. A. G. Spalding & Brothers of Canada, Ltd., Brantford, Ontario, assignee of William W. MacDonald, Chicopee, Massachusetts, U. S. A.  
 262,233 Billiard table cushion. Thurston & Co., Ltd., London W., assignee of Frederick Ling, London, S. W. 6, both in England.

### July 6, 1926

- 262,321 Knickerbocker leg band. Joseph Wolfe Goldenberg, Montreal, Quebec.  
 262,342 Rubber flower. Doris Sophie Munn, Gourouck, Scotland.

## The United Kingdom

### June 2, 1926

- 250,160\* Subaqueous sound signals. Submarine Signal Corporation, 160 State street, Boston, assignee of R. L. Williams, 107 Waban Hill road, North Chestnut Hill, both in Massachusetts, U. S. A.  
 250,213 Self feeding brushes. R. M. Withycombe, Wyoming, Macquarie street, Sydney, Australia.  
 250,214\* Brushes. R. M. Withycombe, Wyoming, Macquarie street, Sydney, Australia.

## June 9, 1926

- 250,255\* Tire jackets and covers. G. Bellini, 3078 Chiovers San Rocco, Venice, Italy.
- 250,335 Gramophone employing rubber. C. A. Youldon, 240, Camden road, London, and W. H. Pearce, 102, High street, Bromley, Kent.

- 250,374 Telephone head set. A. P. R. Willis, High Elms, Leatherhead, Surrey.

## June 16, 1926

- 250,451 Electric fuses for accumulators. W. Whitehead, 10, Park avenue, Cheetham Hill, Manchester.
- 250,469 Shaving brushes. D. R. Walker, Avonbank, Corstorphine, Edinburgh.
- 250,498 Closet seat buffers. F. M. Kozminski, 72 Decker avenue, Port Richmond, Staten Island, New York, U. S. A.
- 250,512 Tire jackets and covers. F. A. Krusemark, Twin Oaks Apartment, Twin Oaks road, Akron, Ohio, U. S. A.
- 250,571\* Telephone attachments. J. A. Van Steyn, 1 Waldeck Pyrmontlaan, Apeldoorn, Holland.

## June 23, 1926

- 250,727 Molded culverts. T. Nose, 86 Nikaido, Kamakura Machi, Kamakura Gun, Kanagawa Ken, Japan.
- 250,736 Syringe. I. M. Stainton, 11, Hillfield Park, Muswell High, London.
- 250,755 Rubber backing for neckties. L. R. Holt, 3, The Crescent, Menston, Yorkshire.
- 250,765 Telephone lead. S. G. S. Dicker, 20, Holborn, London (Kabel-fabrik Art.-Ges., Bratislava, Czechoslovakia).
- 250,848 Universal joints. W. W. Groves, 30, Southampton Buildings, London (International Motor Co., 25 Broadway, New York, N. Y., U. S. A.).
- 250,873 Electric cables. Johnson & Phillips, Ltd., Victoria Works Charlton, and C. Stewart Blantyre, Beaconsfield road, Blackheath, both in London.
- 250,903\* Inflatable ball. Wilson-Western Sporting Goods Co., 2037 Powell avenue, assignee of A. J. Turner, 4524 Springfield avenue and T. E. Wilson & Co., 2037 Powell avenue, all in Chicago, Illinois, U. S. A.

## June 30, 1926

- 250,904 Submarine cables. Felten & Guillaume Carlswerk Akt.-Ges., Mulheim, Cologne, Germany.
- 251,131 Pockets for waterproof garments. F. D. Tippetts, 81, Moor street, Birmingham, and D. Levi, 26, Edge street, High street, Manchester.
- 251,151 Telephone loud speaker. J. Piquart, 20, Holmdale road, Hampstead, London.
- 251,196 Stocking suspenders. L. M. Schneider, 150 West 95th street, New York, N. Y., U. S. A.
- 251,206 Tire jackets and covers. P. C. Rushen, 28, Southampton Buildings, London (Overseas Wire Cord Co., 120 Broadway, New York, N. Y., U. S. A.).
- 251,220 Fastening for elastic shoe insertions. W. Kühl, 45, Kielerstrasse, Neumünster, Holstein, Germany.

\* Not yet accepted.

## New Zealand

## May 20, 1926

- 56,159 Tube cleaner. Donald William Bodle and William Waring, both of Rathbone street, Whangarei.

## June 3, 1926

- 54,638 Brush. Hubert Stanley Thoreau, Glen-iti, near Timaru.

## Germany

- 430,638 (November 1, 1924). Rubber bandage to protect the limbs. Clara Herrmann, née Stahn, Hirschstrasse 10, Hanau-am-Main.

## Trade Marks

## The United States

## Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

## June 8, 1926, Act of February 20, 1905

- 213,813 The word: "HARCO" superimposed on an oblong which crosses through two ovals—garters and gloves of rubber, leather, etc. Kenneth F. Hardin, doing business as Hardin & Sliders, New Albany, Indiana.

- 213,835 GIANTIC—tires and inner tubes. Phelps Tire & Rubber Co., Garfield, New Jersey.

- 213,881 TRUE BLUE—inner tubes for pneumatic tires. The India Tire & Rubber Co., Mogadore and Akron, Ohio.

- 214,038 HEVEANOID—cigarette and cigar holders. Superior Hard Rubber Co., Inc., Butler, New Jersey.

## June 15, 1926, Act of February 20, 1905

- 214,088 SPEED-A-WAY—pneumatic tire inner tube patches. James J. Keating, doing business as Speed-A-Way Manufacturing Co., Chillicothe, Ohio.

- 214,090 ADWEAR—rubber, leather and fabric belting. Adwear Process Sole Leather Machine Co., Philadelphia, Pennsylvania.

- 214,094 SUPERFLEX—dredging sleeves. The B. F. Goodrich Co., New York, N. Y.

- 214,105 A square in the bottom of which is the representation of a lion and at the top the words: "HOT STUFF"—patches. Hugh Henry Theis, doing business as White Lion Rubber Works, Taylor, Texas.

- 214,127 CITY—hoof pads. Dryden Rubber Co., Chicago, Illinois.

## June 15, 1926, Act of March 19, 1920

- 214,300 Fanciful design containing the words: "EVER-BEST"—tire repair kits, blowout patches, inner tubes and belts. The Everbest Sales Co., Lexington, Kentucky.

- 214,303 The words: "KAUFMANN'S THE BIG STORE"—rubber matting and stair pads. Kaufmann Department Stores, Inc., Pittsburgh, Pennsylvania.

- 214,306 GOODYEAR—golf balls. The Goodyear Tire & Rubber Co., Akron, Ohio.

## June 22, 1926, Act of February 20, 1905

- 214,311 Double circle, the inner one containing a representation of a lighthouse beneath which are the numerals: 1923; between the inner and outer circles are the words: "STED-FAST"—rubberized woven and unwoven fabrics. Abraham Sydemann, doing business as Stedfast Fabric & Rubber Co., Mattapan, Massachusetts.

## June 22, 1926, Act of March 19, 1920

- 214,492 PATCH-IT—repair packages for inner tubes, rubber boots, garden hose, etc. Racine Rubber Co., Racine, Wisconsin.

- 214,505 JOHN SHANNON'S ENGLISH CLOTHES—mackintoshes, etc. John Shannon & Son, Ltd., Walsall and London, W. 1, England.

## June 29, 1926, Act of February 20, 1905

- 214,669 Representation of a triangle enclosing an oak tree, beneath the triangle the word: "TUPOAK"—rubberized gloves, aprons, leggings and coats. Tufoak Products Co., Oakland, California.

## July 6, 1926, Act of February 20, 1905

- 214,767 RUBBER-OONS—rubber toys. Harold S. Wittmaak, Erie, Pennsylvania.

- 214,792 TEX-STYLE—raincoats, etc. Eastern Textile Co., Omaha, Nebraska.

- 214,819 PETROL—belt clamps or fasteners. Victor Balata & Textile Belting Co., New York, N. Y.

- 214,822 TRIPLE FIT, the first and last letters lengthened to form a V which encloses the words: "NARROW ARCH" and "A FIRELESS WALKER; above the V are the words: "ARCH SUPPORTING"—rubber, leather and fabric shoes. Tuttle-Scott Stores, Inc., Toledo, Ohio.

- 214,844 Double circle, the inner one containing the monogram: S W, between the two circles the words: "NORFOLK'S FASHION CENTER; below the circles the words: "FASHION-RIGHT"—rubber, leather and fabric gloves, etc. Smith & Welton, Inc., Norfolk, Virginia.

- 214,852 EARL CRAGG—leather and rubber shoes, etc. The Joseph & Feiss Co., Cleveland, Ohio.

- 214,870 Representation of the sun, and at the top the words: "SUN-RAY"—rubber, leather and fabric boots and shoes. John Davis Shoe Stores, Inc., Boston, Massachusetts.

- 214,908 Oblong containing the words: "DOROTHY DODD" and "SMART SIX," the letter S in the two last words being represented by the dollar sign—shoes of rubber, leather, etc. Dorothy Dodd Shoe Co., Boston, Massachusetts.

- 214,915 RITE CHARACTER—shoes of leather, rubber, etc. London Shoe Co., Inc., New York, N. Y.

- 214,916 Fanciful square—gloves of rubber; leather, etc. The Daniel Hays Co., Gloversville, New York.

- 214,919 Fanciful design containing the initials: "K & M" and the words: "DR. NOGUCHI SHOE FOR THE SMALL BROAD FOOT"—shoes of leather, rubber, etc. Kerr & Mavor, New York, N. Y.

- 214,921 "ARROW WHITE ROCK"—boots and shoes. Hood Rubber Co., Watertown, Massachusetts.

- 214,922 "ARROW"—boots and shoes. Hood Rubber Co., Watertown, Massachusetts.

- 214,936 "MAIN STREET"—leather and rubber shoes. Endicott Johnson Corporation, Endicott, New York.

- 214,973 "KAHIRA"—bathing caps. Margaret Hamilton, Memphis, Tennessee.

## July 6, 1926, Act of March 19, 1920

- 215,052 SERVICE "TYPE-CLEANING" BRUSH—rubber stamps, etc. The Service Products Manufacturing Co., Chicago, Illinois.

## The Dominion of Canada

## Registered

June 8, 1926

- 39,840 Word: "GIRDLE"—hose supporters. George Frost Co., Boston, Massachusetts, U. S. A.
- 39,845 Ellipse with a letter "P" in the center and a plurality of lines to form a background, and with the numerals: "18" on one side and "41" on the other; above is the word: "PERRY'S", and below the words: "ELASTIC CORDS"—cotton elastic cord. Fergus Perry, Philadelphia, Pennsylvania, U. S. A.
- 39,851 Word: "TIFFY"—footwear. Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec.

June 15, 1926

- 38,869 Letters: "N.A.P." displayed on the representation of a tire—tires, N.A.P. Pneumatic Tyre Co., Ltd., 27, Queen Victoria street, London, E. C. 4, England.
- 39,890 Words: "TIP TOP TREATMENT," enclosed in a rhombus printed on colored paper—composition for treating automobile rubberized sheeting tops after washing to prevent cracking and make them waterproof. Richard C. Humble, Windsor, Ontario.

June 22, 1926

- 39,925 Word: "PALCOSELL"—puncture proofing preparation. P. A. Lefebvre & Co., Alexandria, Ontario.
- 39,940 Words: "VAGABOND SASH"—rubber bands, girdles, corsets, etc. Dorothy Bickum, New York, N. Y., U. S. A.

June 29, 1926

- 39,999 Double oval line with a background of vertical shaded lines and as a subbackground the letter: "D" cut through the middle by two lines enclosing a white background and bearing within the lines the word: "DUCKETT"—elastic hosiery, etc. John Alfred Duckett, Montreal, Quebec.
- 40,007 Word: "VELTIX"—chemical product used in the manufacture of paint, coatings, rubber, etc. Société Anonyme La Vente des Blancs De G. Rocour & Cie., 56 Voerweg, Eysden, The Netherlands.
- 40,009 Words: "BUCKEYE CORP"—solid and pneumatic tires and inner tubes. Kelly-Springfield Tire Co., New York, N. Y., U. S. A.

July 6, 1926

- 40,034 Word: "DEPENDON"—golf balls, etc. Canada Needle & Fishing Tackle Co., Ltd., Toronto, Ontario.
- 40,053 Word: "USKIDE"—heels, soles and other goods of rubber composition in sheets or blocks. Dominion Rubber Co., Ltd., Montreal, Quebec.
- 40,054 Outline representation of a heel for footwear and having imprinted thereon the words: "USKIDE HEEL"—"DOMINION RUBBER CO. LIMITED"—"VILMA" and "MADE IN CANADA"—heels, soles, etc. Dominion Rubber Co., Ltd., Montreal, Quebec.

## The United Kingdom

June 2, 1926

- 468,473 "WARRIOR"—balata machine belting. Mosers, Ltd., 178, Borough High street, London, S. E. 1.
- 469,002 "TORVIC"—rubber machine and conveyer belting. Gutta Percha & Rubber, Ltd., 47, Yonge street, Toronto, Canada. (Lloyd Wise & Co., 10, New Court, Lincoln's Inn, London, W. C. 2.)
- 469,003 "TORVIC"—tubular hose. Gutta Percha & Rubber, Ltd., 47, Yonge street, Toronto, Canada. (Lloyd Wise & Co., 10, New Court, Lincoln's Inn, London, W. C. 2.)
- 469,033 LADYSHIP—elastic sandallings, webs and cords. John Thomas Pendered, trading as J. T. Pendered, 15, Aldersgate street, London, E. C. 1.

June 9, 1926

- B459,408 A circle in the center of which is the representation of a writer, at the top the word: "ALBION," beneath the words: "TRADE MARK"; around the circle the words: THE NORTH BRITISH RUBBER CO., LTD.—boots, shoes and overshoes. The North British Rubber Co., Ltd., Castle Mills, Fountainbridge, Edinburgh, Scotland.
- 468,721 CENTENARY—goods manufactured from rubber and gutta percha. Thomas Wallis & Co., Ltd., Holborn Circus, London, E. C. 1.
- 469,331 GUARDSMAN—all goods included in Class 40. Redfern's Rubber Works, Ltd., Dawson and Spring Bank streets, Hyde, Cheshire.

June 16, 1926

- B455,007 "SECURITAS"—rubber solution. The "Securitas" Non-Inflam- mable Products Co., Ltd., 9-10, Domingo street, London, E. C. 1.
- 461,404 Representation of a pyramid and beneath the representation the word: "PYRAMID"—wrists and ankle supports. J. Hardy Smith & Sons, Leadenhall Buildings, Belgrave Gate, Leicester.
- 466,682 "STICK-A-SOLES"—plate or pad attachment for boot and shoe soles. Phillips' Patents, Ltd., 142-146, Old street, London, E. C. 1.
- 466,683 "MILITARY"—plate or pad attachment for boot and shoe soles or heels. Phillips' Patents, Ltd., 142-146, Old street, London, E. C. 1.

- 467,692 Representation of Mephisto holding a vulcanizer, above the representation the words: "THE MEPHISTO AUTOMATIC VULCANIZER"—vulcanizing apparatus. Harry Raphael, 29a, Marylebone Lane, Oxford street, London, W. 1.

June 23, 1926

- 466,937 "FEDERAL"—tires. The Federal Rubber Co. of Illinois, Layton and Holthoff avenues, Cudahy, Michigan, U. S. A.
- 468,952 "LECITE"—rubber covered wire. The Liverpool Electric Cable Co., Ltd., Linacre Lane, Bootle, Liverpool.
- 468,953 "LECITE"—rubber covered wire. The Liverpool Electric Cable Co., Ltd., Linacre Lane, Bootle, Liverpool.
- 469,884 "MOUNTY"—all goods included in Class 40. The Mountford Rubber Co., Ltd., 13, Weaman street, Birmingham.

June 30, 1926

- 466,684 PHILLIPS—rubber solution. Phillips' Patents, Ltd., 142 to 146, Old street, London, E. C. 1.
- 467,359 Representation of a slipknot and beneath it the word: "SLIPKNOT"—electric insulating tape. Plymouth Rubber Co., Inc., Revere street, Canton, Massachusetts, U. S. A. (Henry Imrie & Co., 72-74 Cannon street, London, E. C. 4.)
- 467,360 Representation of a slipknot and beneath it the word: "SLIPKNOT"—electrical insulating tape. Plymouth Rubber Co., Inc., Revere street, Canton, Massachusetts, U. S. A. (Henry Imrie & Co., 72-74 Cannon street, London, E. C. 4.)
- 467,784 HELENITE—electric insulators. St. Helen's Cable & Rubber Co., Ltd., Trading Estate, Bath road, Slough.
- 469,751 STYLENITE—insulated electric cables. St. Helen's Cable & Rubber Co., Ltd., Trading Estate, Bath road, Slough.
- 469,804 MARVO—suspenders for stockings, belts, braces, etc. Faire Brothers & Co., Ltd., 2, Southampton street, and St. George's Mills, Leicester.

## Designs

## The United States

- 70,328 Tire. Term 14 years. Harry C. Hower, Chicago, Illinois.
- 70,365 Tire tread. Term 14 years. Tully Graybill and Reginald H. Waters, assignors to Kelly-Springfield Tire Co., all of Cumberland, Maryland.
- 70,370 Tire. Term 14 years. Alely E. Jones, Cuyahoga Falls, assignor to Lambert Tire & Rubber Co., Barberton, both in Ohio.
- 70,380 Tire. Term 14 years. Thomas C. Marshall, Mount Savage, assignor to Kelly-Springfield Tire Co., Cumberland, both in Maryland.
- 70,400 Storage battery container. Term 7 years. Stanley T. Campbell, Euclid Village, assignor to The Aetna Rubber Co., Cleveland, both in Ohio.
- 70,429 Box or similar container. Term 7 years. Nathan Kase, Brooklyn, assignor to Kase-Quinby Rubber Co., Inc., New York, both in New York.
- 70,440 Tire tread. Term 7 years. John E. Lorentz, assignor to The Pharis Tire & Rubber Co., both of Newark, Ohio.
- 70,461 Tire. Term 14 years. Charles P. Wilcox, Chicopee, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

## The Dominion of Canada

- 7,183 Tire tread. Wingham Rubber Co., Ltd., Wingham, Ontario.

## Germany

- 949,517 (April 16, 1926). Automatic rubber tapping knife. August Krumm, Johann Krumm, Sohn, Reinscheid.
- 949,570 (April 12, 1926). Massage brush with rubber base and metal bristles for use on massage apparatus worked by electricity. Metallica Metallbearbeitungs-Gesellschaft m. b. H., Frankfurt-am-Main.
- 949,810 (May 4, 1926). Permanent writing pad of rubber. Willi Wernecke, König-Albertstrasse 5, Stettin.
- 950,422 (April 19, 1926). Rubber protective cover for the legs of wicker furniture. Ernst Liborius, Senefelderstrasse 73, Offenbach-am-Main.
- 951,033 (April 19, 1926). Polisher of rubber. Harburger Gummiwaren-Fabrik, Phonix A.-G., Harburg a.-d.-Elbe.
- 951,041 (April 23, 1926). Inflatable rubber balloon with an advertising figure fixed to a hollow wood tube. Hans Engel, Geisbergstrasse 23, Berlin.
- 951,207 (May 8, 1926). Lace of rubber to be used as decoration in kitchens and similar places. Firma M. Steinberg, Köln-Lindenthal.
- 951,208 (May 8, 1926). Lace of rubber to be used to decorate rubber articles. Firma M. Steinberg, Köln-Lindenthal.
- 951,483 (April 30, 1926). Automatic floating valve with double rubber closure for toilet tanks and water containers. Adolf Ochs, Gartenstrasse 7, Hildesheim.
- 951,756 (April 22, 1926). Gymnasium mats of cellular rubber. Ernst Simen & Co., Berlin.

## Labels

## The United States

- 30,496 THE HOSE WITH MORE FABRIC—hose. Pioneer Rubber Mills, San Francisco, California. Published February 26, 1926.

## The Market for Rubber Scrap

### New York

July business in rubber scrap showed more activity than in June due to an increase in consuming demand. Collections of all grades are now in improved volume. Prices are firm and unchanged for practically all grades of scrap except inner tubes and tires and these are firm and higher. Foreign export business shows no improvement.

**BOOTS AND SHOES.** Prices are firm and steady with a slight advance in black boots and shoes. The consuming demand is a trifle better than it was last month.

**INNER TUBES.** Stocks and collections on all grades are in good volume. The demand for No. 1 floating and No. 2 compounded is well maintained.

**TIRES.** Collections are running in larger volume in response to the increase of demand on the part of reclaimers. Mixed and white auto tires have advanced \$3.00 a ton and mixed peeling \$1.00 a ton. Solid tires are up \$1.00 to \$2.00 a ton.

**MECHANICALS.** All grades are firm and unchanged with demand moderate and seasonal. Chief demand is for air brake hose.

### Quotations for Carload Lots

July 26, 1926

#### Boots and Shoes

Boots and shoes, black.....	lb.	\$0.02	@ \$0.02½
Red and white.....	lb.	.01	@ .01½
Trimmed arctics, black.....	lb.	.01	@ .01½
Untrimmed arctics.....	lb.	.00¾	@ .007½
Tennis shoes and soles.....	lb.	.00¾	@ .01

#### Hard Rubber

No. 1 hard rubber.....	lb.	.13	@ .14
Battery jars, black compound.....	lb.	.01¾	@ .017½

#### Inner Tubes

No. 1, floating.....	lb.	.09	@ .09½
No. 2, compounded.....	lb.	.07½	@ .07¾
Red.....	lb.	.06	@ .06½
Mixed tubes.....	lb.	.06½	@ .06¾

#### Mechanicals

Mixed black scrap.....	lb.	.01	@ .01½
Heels.....	lb.	.007½	@ .01
Hose, air-brake.....	ton	25.00	@ 26.00
regular.....	ton	20.00	@
No. 1 red.....	lb.	.02½	@ .02¾
No. 2 red.....	lb.	.01¾	@ .02
Red packing.....	lb.	.01¾	@ .01¾
White, druggists' sundries.....	lb.	.03½	@ .04
Mechanical.....	lb.	.01½	@ .01¾

#### Tires

<b>Pneumatic Standard—</b>			
Mixed auto tires with beads.....	ton	24.00	@ 25.00
Beadless.....	ton	33.00	@ 34.00
White auto tires with beads.....	ton	43.00	@ 44.00
Beadless.....	ton	57.00	@ 58.00
Mixed auto peelings.....	ton	35.00	@ 36.00

#### Solid—

Mixed motor truck, clean.....	ton	40.00	@ 41.00
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**The following scrap rubber dealers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.**

Birkenstein, S., & Sons, Chicago, Illinois.  
 Chalfin, Joseph, & Co., Inc., New York, N. Y.  
 Cummings, Wm. H., & Sons, New York, N. Y.  
 Muehlstein, H., & Co., Inc., New York, N. Y.  
 Norton, M., & Co., Medford, Massachusetts.  
 Schnurmann, J., London, England.  
 Weber, Hermann, Hoboken, New Jersey.

## Reclaimed Rubber

### New York

During July the consumption of reclaims was stimulated by the enlargement of tire production schedules which now call for capacity output in many plants. In spite of the utilization of their increased facilities many reclaimers are back-ordered a month. Scrap rubber is getting firmer in response to demand and the situation will probably result in higher prices for reclaims this fall. The current quotations are unchanged from those of a month ago. The demand runs chiefly to high tensile reclaims, inner tube stocks, standard tires and white reclaims, the latter going in large amounts into floor tiling particularly.

Reclaimers are confident of good business for the remainder of the year and consider the recent tire price cut as a bull argument on the side of reclaims. The stimulus accorded to reclaims as a factor of increasing importance in the rubber industry is believed to mark the opening of a new era in the industry.

All the works laboratories are endeavoring to apply reclaims in the endeavor to determine how far it may be utilized without impairment of standard quality goods.

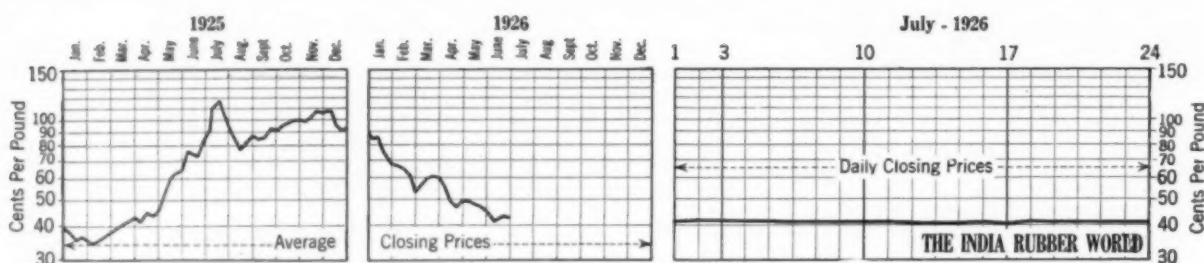
### New York Quotations

July 26, 1926

Auto Tire	Specific Gravity	Price Per Pound
Black.....	1.21	\$0.10½ @ \$0.10½
Black, washed.....	1.18	.11½ @ .11¾
Black selected tires.....	1.20	.11¾ @ .12
Dark gray.....	1.35	.14½ @ .14¾
Light gray.....	1.38	.16½ @ .16¾
White.....	1.40	.18½ @ .19
<b>High Tensile Black</b>		
Super-reclaim, No. 1.....	1.20	.24 @ .25
No. 2.....	1.20	.18 @ .19
<b>Shoe</b>		
Unwashed.....	1.60	.09¾ @ .10
Washed.....	1.50	.12½ @ .12¾
<b>Tube</b>		
No. 1.....	1.00	.22 @ .23
No. 2.....	1.18	.17 @ .18
<b>Uncured Tire Friction</b>		
No. 1.....	1.00	.32 @ .35
No. 2.....	1.20	.25 @ .27
<b>Miscellaneous</b>		
High grade, red.....	1.35	.17½ @ .18
Truck tire, heavy gravity.....	1.55	.10 @ .10¾
Truck tire, light gravity.....	1.40	.10½ @ .10¾
Mechanical blends.....	1.60	.08 @ .09

**The following reclaimed rubber dealers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.**

Appleton Rubber Co., Franklin, Massachusetts.  
 Bloomingdale Rubber Co., New York, N. Y.  
 Clapp, E. H., Rubber Co., Boston, Massachusetts.  
 Defiance Rubber Co., Defiance, Ohio.  
 Manhattan Rubber Manufacturing Co., Passaic, New Jersey.  
 Nearpara Rubber Co., Trenton, New Jersey.  
 New Jersey Rubber Co., Lambertville, New Jersey.  
 Pequannoc Rubber Co., Butler, New Jersey.  
 Philadelphia Rubber Works, Philadelphia, Pennsylvania.  
 Rubber Regenerating Co., Naugatuck, Connecticut.  
 Somerset Rubber Reclaiming Works, New Brunswick, New Jersey.  
 U. S. Rubber Reclaiming Co., Inc., New York, N. Y.  
 Vulcan Recovery Co., Trenton, New Jersey.  
 Xylos Rubber Co., Akron, Ohio.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

## Review of the Crude Rubber Market

### New York Open Market

**T**HE July rubber market was dull and inactive the entire month due to continued lack of interest on the part of consumers.

Spot prices of ribbed smoked sheets have steadily declined regardless of their effect on the quarterly average price in London which is steadily approaching the critical level of 21d. Should it average below this price a reduction of 20 per cent from standard production will be made in the exportable allowance for the next 3 months from August 1. On July 26 the quarterly average price figured at 21.05 pence in London, and for the week ended July 31, it was necessary that the price should maintain the level of 20.125 pence that the average for the past quarter might not fall below 21 pence and thus forestall the proposed reduction.

Despite these conditions the market was extremely quiet. Manufacturers have plenty of rubber or are buying only in small quantities for special needs. Dealers generally decline to operate in the present market and like the manufacturers are waiting for coming developments on August 1.

If manufacturers would purchase for their needs of the next few weeks they could save the curtailment of rubber shipments for the next quarter. However, they know that there is an ample supply of rubber available whether further restriction becomes effective or not. Should it be effective the price will probably react upward, and if not effective the price will continue to sag. Rubber producers and consumers are opposed and waiting for developments. In consequence there has been but very little business doing either on the Rubber Exchange or the open market.

During the week ended July 3, the open market dullness was unrelieved by factory support. The fluctuations ranged from one-half to one cent a pound with a distinct downward trend prevailing to the close. The decline during this period was 2½ cents a pound, June closing with the downward tendency well established with spot ribbed smoked sheets at 42 cents buyers, 42¼ cents sellers.

During the week ended July 10, there was much the same condition of dullness in trading and sales as in the week previous. It was shortened by the holiday and the general dullness was undisturbed by business. On July 6 spot ribs were 41½ cents buyers, 42 cents sellers and July 10 were the same.

The market for the week ended July 17 exhibited mixed conditions. There was a small amount of factory business placed for current needs. On July 12 spot ribs were 41¼ cents buyers, 41½ cents sellers.

During the week ended July 24, there was a more or less factory interest and buying both for nearby and futures.

Business was refused by several large dealers who let it be known that they would neither buy nor sell for the remainder of the month. This was on account of the waiting attitude on

the part of the trade in general and the uncertainties of the situation pending the decision August 1 of the release of rubber for the next quarter. On July 19 spot ribs were 41½ cents buyers, 41¾ cents sellers. The prices were slightly firmer on July 24 at 41 buyers and 41¼ sellers.

During the entire month there was not over ¼-cent in favor of first latex crêpe over ribs.

London cables July 30 announced that rubber averaged over 21d. the past quarter. Therefore no reduction will be made in the exportable allowance during the next quarter.

Importations of all grades in June were 30,107 tons, compared with 30,337 tons one year ago. Plantation arrivals for June were 27,915 tons, compared with 28,522 tons one year ago. Total importations of plantation rubber for six months ended June 30, 1926, were 194,977 tons compared with 169,399 tons for the corresponding period of 1925. Total importations of all grades of rubber for the six months ended June 30, 1926, were 208,637 tons compared with 181,787 tons for the corresponding period of 1925. Arrivals July 1 to 24 were 26,168 tons.

Arrivals for the full month of July are estimated at 38,000 tons, compared with 30,107 tons in June.

On July 10 the Rubber Division of the Department of Commerce issued a special circular of preliminary statistics of June crude rubber imports. At the ports of New York and Boston the total amount of crude rubber and liquid latex imported was 24,914 long tons, valued at \$34,737,000, average value 62.24 cents per pound. During recent months 96 per cent of the rubber imports to the United States was entered through these two ports.

### New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago, and July 26, the current date:

Plantation Hevea	July 25, 1925	June 26, 1926	July 26, 1926
Rubber latex (Hevea) ..gal.	\$3.50 @	\$1.80 @	\$1.80 @
<b>CREPE</b>			
First latex, spot...	1.15 @	1.15½ @	.43 @
Aug. ....	1.08 @	1.09 @	.41½ @
Aug.-Sept. ....	1.03 @	1.04½ @	.42 @
Oct.-Dec. ....	.92 @	.94 @	.42½ @
Jan.-Mar. ....	.85 @	.86 @	.43½ @
Off latex, spot...	1.14 @	.42 @	.44½ @
Amber No. 2, spot...	.94 @	.95 @	.37½ @
Aug. ....	.88 @	.90 @	.37½ @
Aug.-Sept. ....	.85 @	.87 @	.38 @
Oct.-Dec. ....	.83 @	.84 @	.38 @
Jan.-Mar. ....	.79 @	.80 @	.38½ @
Amber No. 3, spot...	@	.36½ @	.37 @
Brown, thin, clean...	@	.37 @	.38 @
Brown, specky...	@	.35 @	.36 @
Brown, roll...	.79 @	.80 @	.33 @
Sole crêpe...	1.15 @	@	.65 @
<b>SHEET</b>			
Ribbed, smok'd spot...	1.15 @	1.16 @	.42½ @
Aug. ....	1.09 @	1.10 @	.41 @
Aug.-Sept. ....	1.04 @	1.05½ @	.41 @
Oct.-Dec. ....	.92 @	.94 @	.42½ @
Jan.-Mar. ....	.85 @	.86 @	.43 @

## New York Spot Closing Rubber Prices—Cents Per Pound

PLANTATIONS	June, 1926																	July, 1926														
	21	22	23	24	25	26	28	29	30	1	2	3†	5*	6	7	8	9	10	12	13	14	15	16	17								
Ribbed Smoked	44½	44½	43¾	43	42¾	42½	42½	42½	41¾	41¾	42¼	...	...	41¾	41¾	41½	41½	41½	41½	40¾	40¾	40¾	40¾	41¾	41¾							
Crêpe	44½	44½	43¾	43	42¾	42½	42½	42½	41¾	41¾	42¼	...	...	41¾	41¾	41½	41½	41½	41½	40¾	40¾	40¾	40¾	41¾	41¾							
First Latex	44½	44½	43¾	43	42¾	42½	42½	42½	41¾	41¾	42¼	...	...	41¾	41¾	41½	41½	41½	41½	40¾	40¾	40¾	40¾	41¾	41¾							
No. 2 blanket	40¼	39¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	38¾	...	...	38¾	38¾	38¾	39	39	38¾	38¾	38¾	38¾	38¾	38¾	38¾							
No. 3 blanket	39½	39¾	38¾	37¾	37¾	37¾	37¾	37¾	38	37½	37¾	...	...	38	38	38	38¾	38¾	38¾	38¾	37¾	37¾	37¾	38¾	38¾							
No. 4 blanket	38¾	38	37	37	36¾	36¾	37	37	36¾	36¾	37	...	...	37¾	37	37	37¾	37¾	37¾	37¾	36¾	36¾	37	37¾	37¾							
Thin clean brown	39¾	39¾	38¾	37¾	38	38½	38	38½	38	38½	37½	...	...	38¾	37¾	38¾	38¾	38¾	38¾	38¾	38	37	38	38¾	38¾							
Roller brown	35¾	35¾	35	34¾	34½	34½	34¾	34¾	34¾	34¾	34½	...	...	34¾	34¾	34¾	35	35	35	34¾	34	34¾	35¼	35¼	35¼							
Off Latex	43	43	42½	41¾	41¾	41¾	41¾	41¾	41¾	41¾	40¾	...	...	41	40¾	40¾	40¾	40¾	40¾	40¾	40¾	39¾	39¾	40¾	40¾							

\* Holiday. † No market.

East Indian	July 25, 1925	June 26, 1926	July 26, 1926	Guayule	July 25, 1925	June 26, 1926	July 26, 1926
<b>PONTIANAK</b>				Duro, washed and dried	\$0.63 @	\$0.33 @	\$0.33 @
Banjerassin	....\$0.09¾@	\$0.15 @	\$0.16 @	Leon, washed and dried	@	.31 @	.31 @
Palembang	.....@	@	@	<b>Gutta Percha</b>			
Pressed block	.... .17 @	.26 @	.25 @	Gutta Siak	..... .21 @	.34 @	.29 @
Sarawak	..... .09¾@	.16½@	.16½@	Gutta Soh	..... .30 @	.26 @	.26 @
				Red Macassar	..... 3.00 @	3.00 @	3.00 @
<b>South American</b>				<b>Balata</b>			
<b>PARAS</b>				Block, Ciudad Bolivar	.63 @ .70	.58 @ .60	.60 @
Upriver, fine	..... 1.07 @ 1.08	.38 @	.41 @	Colombia	..... .53 @ .63	.40 @ .42	.45 @
Upriver, fine	.....@	*.53 @	*.54 @	Panama	..... .53 @ .55	.38 @ .40	.45 @
Upriver, medium	.....@	.33 @	.33 @	Surinam sheet	..... .77 @	.75 @ .80	.82 @
Upriver, coarse	.... .73 @ .74	.22½@	.23½@	amber	.....@	.80 @ .85	.85 @
Upriver, coarse	.....@	.40 @	.40 @	<b>Chicle</b>			
Islands, fine	..... .94 @ .95	.32 @	.39 @	Honduras	..... \$.58 @ .68	\$.64 @	\$.64 @
Islands, fine	.....@	*.52 @	.41 @	Yucatan, fine	..... \$.58 @ .68	\$.65 @	\$.65 @
Cameta	..... .51 @ .53	.25 @	†.25 @	* Washed and dried crépe. Shipment from Brazil.			
Acre, Bolivian, fine	.....@	.39 @	.41½@	† Nominal. ‡ Duty paid.			
Acre, Bolivian, fine	.....@	*.54 @	*.55 @				
Beni Bolivian	.....@	.39 @	.41¾@				
Madeira	.....@	.39 @	.41¾@				
Peruvian, fine	.....@	.37 @	.36 @				
Tapajos, fine	.....@	.35 @	.37½@				
<b>CAUCHO</b>				<b>Comparative Low and High New York Spot Rubber Prices</b>			
Upper Caucho ball	.74 @	.24 @	.23½@				
Upper Caucho ball	.....@	*.40 @	*.41 @				
Lower Caucho ball	.70 @	.22 @	.23 @				
<b>Maniobas</b>							
Ceará negro heads	.75 @	.40 @	†.35 @				
Ceará scrap	..... .50 @	.20 @	†.18 @				
Manioba 30% guar.	.60 @	.37 @	†.34 @				
Mangabeira, thin sht.	.55 @	.40 @	†.38 @				
<b>Centrals</b>							
Central scrap	.70 @	.22 @	.24 @				
Central wet sheet	.....@	.12 @	.15 @				
Corinto scrap	.72 @	.22 @	.24 @				
Esmeralda sausage	.72 @	.22 @	.24 @				

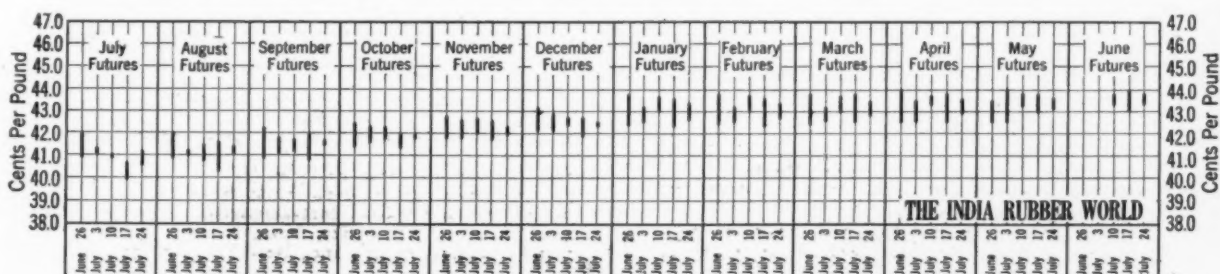
\* Washed and dried crêpe. Shipment from Brazil.  
† Nominal. ‡ Duty paid.

## The Rubber Exchange of New York, Inc.

## Daily Market Futures—Ribbed Smoked Sheets—Closing Prices—Cents Per Pound

	June, 1926										July, 1926																			
	21	22	23	24	25	26	28	29	30	1	2	3	5	6	7	8	9	10	12	13	14	15	16	17	19	20	21	22	23	24
1926	42.0	42.0	41.1	41.0	41.0	40.9	41.1	41.0	40.8	41.0	41.3	...	...	40.9	40.6	40.8	41.0	41.0	40.7	40.1	39.9	41.1	40.5	40.7	40.8	40.6	40.6	40.5	41.2	41.2
July	42.0	42.0	41.1	41.0	41.0	40.9	41.1	41.2	41.0	41.0	41.4	...	...	41.0	40.8	41.1	41.5	41.3	41.1	40.4	40.3	40.4	41.3	41.6	41.4	41.3	41.2	41.0	41.0	41.0
Aug.	42.0	42.2	41.0	41.0	41.0	40.9	41.1	41.2	41.1	41.2	41.1	...	...	41.1	41.2	41.6	41.7	41.7	41.5	40.9	40.8	41.1	41.8	42.0	41.7	41.6	41.6	41.5	41.5	41.5
Sept.	42.5	42.5	41.4	41.6	41.6	41.4	41.6	41.7	41.6	41.8	42.3	...	...	41.8	41.7	42.0	42.3	42.2	41.9	41.3	41.3	41.3	41.9	42.0	41.9	41.7	41.8	41.7	41.7	41.7
Oct.	42.5	42.8	41.8	42.0	42.0	41.8	41.8	41.8	41.8	42.0	42.6	...	...	42.7	42.0	42.0	42.4	42.4	41.9	41.7	41.8	42.0	42.4	42.5	42.3	42.1	42.1	41.9	42.1	42.1
Nov.	42.5	42.8	41.8	42.0	42.0	41.8	41.8	41.8	41.8	42.0	42.6	...	...	42.7	42.0	42.0	42.4	42.4	41.9	41.7	41.8	42.0	42.4	42.5	42.3	42.1	42.1	41.9	42.1	42.1
Dec.	43.2	43.0	42.0	42.1	42.4	42.1	42.1	42.3	42.1	42.5	42.9	...	...	42.7	42.4	42.6	42.5	42.5	42.5	41.9	41.9	41.9	42.2	42.6	42.7	42.5	42.4	42.4	42.2	42.3
1927																														
Jan.	43.5	43.8	42.5	42.4	42.7	42.5	42.5	42.9	42.5	43.0	43.2	...	...	43.1	43.0	43.2	43.7	43.4	43.0	42.3	42.5	42.6	43.5	43.6	43.4	42.7	42.7	42.6	42.7	42.7
Feb.	43.5	43.8	42.5	42.4	42.7	42.5	42.5	42.9	42.5	43.0	43.2	...	...	43.1	43.0	43.2	43.7	43.5	43.1	42.3	42.5	42.8	43.5	43.6	43.4	42.8	42.8	42.7	42.8	42.8
Mar.	43.5	43.8	42.5	42.4	42.7	42.5	42.5	42.9	42.5	43.0	43.2	...	...	43.1	43.0	43.2	43.7	43.5	43.1	42.3	42.5	42.8	43.5	43.6	43.4	42.8	42.8	42.7	42.8	42.8
April	43.5	44.0	42.5	42.5	42.7	42.5	42.7	43.0	42.5	43.0	43.5	...	...	43.5	43.3	43.3	43.7	43.5	43.3	42.5	42.6	43.0	43.5	43.8	43.6	42.9	42.9	42.9	43.0	43.0
May	43.5	44.0	42.5	42.5	42.7	42.5	42.7	43.0	42.5	44.0	44.0	...	...	43.5	43.3	43.4	43.8	43.6	43.4	43.0	43.0	43.0	43.5	43.8	43.6	43.1	43.1	43.1	43.1	43.1
June	43.5	44.0	42.5	42.5	42.7	42.5	42.7	43.0	42.5	44.0	44.0	...	...	43.5	43.3	43.5	43.8	43.6	43.4	43.0	43.0	43.0	43.5	44.0	43.8	43.4	43.4	43.3	43.3	43.3

## New York Rubber Exchange—High and Low Monthly Futures—Cents Per Pound—June 21 to July 24, 1926



### Rubber Exchange of New York, Inc.

Trading on the Rubber Exchange from June 25 to July 24, resulted in the sale of 2,800 contracts equivalent to 7,000 long tons, as compared with 9,755 contracts and 24,387½ tons the previous month.

During the period June 25 to July 3 the market was quite featureless. The general attitude was that of waiting because the strong statistical position and low price levels were strongly in buyers' favor who, however, were not in buying mood. Most of the week's trading was to straighten out positions due to the inauguration of dealing in new contracts provided for recently by a change in the rules. Efforts are being made to liquidate the old contracts as soon as possible to avoid possibility of confusion.

Dealers were engaged in figuring the London average spot price for the current quarter, and discussed the relative strength of those in London who favor, and those who oppose the reduction August 1 in the exportable allowance of rubber from the British controlled plantations. The average spot price in London from May 1 to June 30 was 21.385d. In order to maintain a minimum market price for spot rubber of 21d. for the current quarter it would be necessary that the price should average 20.288d. for July. As a matter of fact the price July 1 was a trifle below that level and was destined to decline still further as July progressed.

Closing prices of the week ended July 3 for August-September, October-December positions were: August 41.4 cents; September 41.8 cents; October 42.3 cents; December 42.9 cents.

In the week July 5 to July 10 there was some buying interest on the part of rubber manufacturers and a fair amount of business resulted for August-September deliveries and some for October-December. Rubber was plentiful for nearby positions and consequently July rubber remained at a discount and buying leaned to the future months. Near the end of the week firm cables from London strengthened the New York price somewhat but the market remained stagnant. Closing prices of the week for August-September, October-December positions were: August 41.3 cents; September 41.7 cents; October 42.2 cents; December 42.5 cents.

The week July 12 to July 17 was a period of fair activity because holders of July, August and September contracts moved to liquidate or switch them into new contracts for the respective months or into forward positions. The October position was the most active month. On July 16 the required average for the London price to be maintained to the end of July was 20.21d. to avoid 20 per cent reduction August 1 in the exportable allowance. Closing prices of the week for August-September and October-December positions were: August 41.6 cents; September 42.0 cents; October 42.0 cents; December 42.7 cents.

In the week July 19 to 24, all markets proved dull. Contracts sold during the week totaled 300 which was far below that of the previous weeks. The margin between the average London price has narrowed down to only 0.073d. above 21d. Closing prices of the week for August-September and October-December positions were: August 41.0 cents; September 41.5 cents; October 41.7 cents; December 42.3 cents.

During the period under review the prices for future positions in

all instances exhibited much narrower spreads as indicated on the graphic chart of their range. Also the high prices for the futures advanced practically to the 44 cent level. The future positions for a year lay between 42 cents, the highest for July and August positions, and 44 cents the highest for April, May and June, 1927. For the week ended July 24 the high and low prices for futures showed only small fractional variations for each position from August to December inclusive.

In answer to a question in the Commons, July 2, concerning rubber restriction, a written reply from the Colonial Office stated that the British Government deemed the change in the minimum price for the purpose of restriction to 21d. necessary to bring the restriction measures more into line with actual conditions of the industry.

### London

The market for the month was generally dull and inactive without buying support or interest. The price has held at 20½d. with practically no change except minor fluctuations. During the 3-day American holiday the market was inactive. However, the week thereafter there was a small amount of buying. Prices were firmer and the last of the week rose to 20¾ and 20¾d. and some speculative buying appeared. The third week, ended July 17, the price declined to 20½d and became easier. The market closed at that price unchanged and quiet.

The fourth week, ended July 24, opened with futures firmer. These declined the following day. Spot ribs maintained 20½d the entire week without change. There was no buying support and the closing sessions of the week were very poorly attended. The operators were evidently in the same waiting mood that characterized those in New York. Producers and consumers are waiting the outcome of the decision due August 1 as to the exportable allowance for the next quarter.

London stocks have gained about 1,000 tons weekly during the month. The weekly record was as follows: June 28, 23,800 tons; July 5, 25,063 tons; July 12, 26,063 tons; July 17, 26,782 tons; July 25, 27,857 tons.

### Singapore

The Singapore market followed that of London closely throughout the month except the prices which advanced very slightly. On July 1 spot ribs were 19¾d and on July 10 rose to 19¾d., from which level they declined to 19¾d again but in the fourth week, ended July 24, the 19¾d level was gained and maintained unchanged. Futures fell off slightly that week and the market closed featureless.

AMERICAN EXPORTS DURING 1925 OF HARD RUBBER GOODS REACHED a value for electrical supplies of \$358,372, while miscellaneous hard rubber commodities totaled \$594,976. For the former class the leading customers were: Canada, taking at the value of \$204,028; the United Kingdom, \$62,929; Australia, \$24,693, and France, \$14,303. The best markets for miscellaneous hard rubber goods included: The United Kingdom, \$236,991; Canada, \$127,000; France, \$91,621; Australia, \$35,313; Mexico, \$18,848, and Cuba, \$17,137.

**The following crude rubber importers, dealers, and brokers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.**

Araujo, J. G. & Co., Manaus, Brazil.  
Astlett, H. A., & Co., New York, N. Y.  
Baird Rubber & Trading Co., New York, N. Y.  
Buckleton & Co., Ltd., Liverpool, England.  
Chalfin, Joseph, & Co., Inc., New York, N. Y.  
Chipman, R. L., New York, N. Y.  
Dunbar, F. W., & Co., Inc., New York, N. Y.  
Dunbar, J. Frank, Co., Inc., New York, N. Y.

Hankin, George, & Co., London, England.  
Hardy, R. S., Co., New York, N. Y.  
Henderson Brothers & Co., Inc., New York, N. Y.  
Hentz, H. & Co., New York, N. Y.  
Hirsch, Adolph, & Co., New York, N. Y.  
Jacoby, Ernest, Boston, Massachusetts.  
Muehlstein, H. & Co., New York, N. Y.  
Wilson, Charles T., Co., Inc., New York, N. Y.

# The Market for Chemicals and Compounding Ingredients

## New York

THERE has been no decrease the past month in the demand for the standard lines of compounding ingredients. Rubber goods manufacturing activity is progressing substantially at capacity in the leading lines with the exception of those that are seasonally less in summer. Stocks of compounding ingredients are ample and prices are firm with no indications of early declines. Intensive studies in rubber compounding on the part of rubber manufacturers are stimulating buying of supplies for the purpose with better discrimination for technical values.

**ACCELERATORS.** The movement of accelerators indicates that they are established as essential in rubber mixings for every purpose. Also that they are being used with due regard to balancing their effect is shown by their selection for curing typically different stocks in such compound construction as obtain in tires, etc. In the great variety of accelerators offered certain ones have attained outstanding popularity and the use of ultra-rapid accelerators is gaining for low-temperature cures.

**ANTI-OXIDANTS.** These newest additions to the rubber compounding's art serve the double purpose of facilitating the mixings by softening the stock and after cure protecting the goods for months or years against loss by aging. Their popularity is steadily increasing. The cost per batch for the small proportion necessary to produce the desired effect is negligible.

**BENZOL.** The demand for this solvent continues excellent. Production is largely sold up and prices are unchanged.

**CARBON BLACK.** With the recent increase in tire output the demand for rubber grades sharply increased early in July. The price has remained steady in spite of the proposed adverse legislation now threatening the carbon black industry in Louisiana. Of the four bills pending, one proposes to abolish the industry

entirely, another would prohibit the manufacture of black in the state at any point within 20 miles of an incorporated community. The third proposes an increase in the tax levied on carbon black consumption. The fourth, backed by the State Conservation Commission, would reduce the daily allotment of natural gas to the industry to 150,000,000 cubic feet. The present allotment of 275,000,000 cubic feet is about 150,000,000 cubic feet less than was being consumed daily by the industry a few years ago. The last bill referred to provides exemptions from its curtailment features to plants where the heat generated in burning the gas can be profitably used in other industries. Carbon black makers are opposing these measures. The market situation has firmed up noticeably but there has been no increase in price.

**CLAY.** The demand for high grade compounding clays is well maintained. The range of prices between inferior and superior qualities is over 100 per cent. Practically the strong reinforcing effects sought by the rubber manufacturer are attainable at minimum cost in the selected grade clays.

**LITHARGE.** Following the minor increases in price effective in June the demand was well maintained. The requests for prompt shipments are on the up grade.

**LITHOPONE.** Domestic is in good demand; imported is reported offered ex-dock at 6.6 cents a pound, a cut of 20 points.

**MINERAL RUBBER.** As a binder, softener and all around substitute for crude rubber M R in combination with reclaim is certain to remain indispensable in rubber working. Its annual consumption is rapidly expanding.

**SOLVENT NAPHTHA.** The usual condition prevails of excellent demand and stocks sold ahead for this popular solvent.

**ZINC OXIDE.** Increasingly large tonnages are being absorbed in the rubber trade and the demand is growing for leaded oxides.

## New York Quotations

July 26, 1926

### Accelerators, Inorganic

Lead, carbonate.....lb.	\$0.10 3/4 @
Lead, red.....lb.	.11 3/4 @
sublimed blue.....lb.	.10 @
sublimed white.....lb.	.10 @
Lime, R. M. hydrated.....ton	15.00 @
Litharge.....lb.	.11 3/4 @
Magnesia calcined, light, (bbils.).....lb.	.20 @
calcined, md. light (bbils.).....lb.	.07 @
calcined, extra light (bbils.).....lb.	.40 @
calcined, heavy (bbils.).....lb.	.05 @
magnesium, carb., light (bags).....lb.	.06 1/2 @
Orange mineral A.A.A.....lb.	.14 @
Rubber lead No. 4.....lb.	@

### Accelerators, Organic

A1.....lb.	.25 @
A 5-10.....lb.	.37 @
A-7.....lb.	.70 @
A 10.....lb.	.47 @
A-11.....lb.	.75 @
A-19.....lb.	.75 @
A-40.....lb.	.70 @
Z-88.....lb.	@
Aldehyde ammonia.....lb.	.82 @ .85
Aniline (drums).....lb.	.16 1/2 @ .17
B. B.....lb.	@
D. P. G. salt.....lb.	.76 @
Di-ortho-tolylguanidine.....lb.	1.08 @
Diphenyl guanidine.....lb.	.88 @
Ethylidine aniline.....lb.	.65 @
Excellerex.....lb.	.35 @ .40
Formaldehyde aniline.....lb.	.42 @
Furac 1, 2 and 3.....lb.	2.50 @
Grassclerator 102.....lb.	.80 @ .85
552.....lb.	4.80 @ 5.00
808.....lb.	1.25 @ 1.50
Heptene.....lb.	.55 @
Hexamethylene tetramine.....lb.	.80 @ .85
Hydrofuramide.....lb.	.25 @
Methylene aniline.....lb.	@
Methylene dianiline.....lb.	3.25 @
Monex.....lb.	.14 @ .18
No. 999 lead oleate.....lb.	.60 @ .65
R. & H. 50 (100 lb. drums).....lb.	.50 @
Super-sulphur, No. 1.....lb.	.18 @ .25
No. 2.....lb.	@

### Accelerators, Organic—(Continued)

Tensilac No. 39.....lb.	\$0.70 @
No. 41.....lb.	.65 @
Thiocarbamilid.....lb.	.28 1/2 @
Trimene.....lb.	.75 @
base.....lb.	1.20 @
Triphenylguanidine.....lb.	.73 @
Tuads.....lb.	3.25 @ 3.50
Vulcone.....lb.	@
Zimate.....lb.	4.00 @

### Acids

Acetic 28% (bbils.).....100 lb.	3.50 @
glacial (carboys).....100 lb.	12.21 @
Oleic.....lb.	@
Stearic.....lb.	.13 @ .13 1/2
Sulphuric, 60° (carboys).....100 lb.	1.35 @

### Alkalies

Caustic soda.....lb.	.03 @
Sulphite soda.....100 lbs.	3.50 @

### Anti-Oxidants

Age-Rite.....lb.	.85 @ .90
Antox.....lb.	@
V. G. B.....lb.	.66 @ .70

### Colors

BLACK	
Bone.....lb.	.05 1/2 @ .11
Carbon (see Compound. Ing.)	
A. & W. nonfl No. 1.....lb.	.40 @
No. 2.....lb.	.25 @
Drop.....lb.	.07 @ .15
Lampblack.....lb.	.10 @ .40
Thermatomic carbon.....lb.	.03 @
BLUE	
A. & W. blue.....lb.	1.25 @ 5.00
Du Pont, N.....100 lbs.	@
Marine, A. C.....100 lbs.	@
Prussian.....lb.	.34 @ .35
Ultramarine.....lb.	.09 @ .35
BROWN	
Sienna, Italian.....lb.	.06 1/2 @ .07
Umber, Turkey.....lb.	.05 1/2 @ .06 1/2

### Colors—(Continued)

#### GREEN

A. & W. green.....lb.	\$1.25 @ \$3.00
Chrom., light.....lb.	.36 @
medium.....lb.	.38 @
dark.....lb.	.40 @
Du Pont, G. L.....100 lbs.	@
Y. L.....100 lbs.	@
Oxide of chromium.....lb.	.35 @ .42

#### ORANGE

Du Pont R. O.....100 lbs.	@
R. X.....100 lbs.	@
Y. O.....100 lbs.	@
Y. X.....100 lbs.	@

#### RED

A. & W. red.....lb.	.75 @ 3.50
purple.....lb.	2.00 @ 4.00
Antimony, golden, No. 1.....lb.	.18 @
No. 2.....lb.	.20 @
golden 15/17%.....lb.	.20 @
Antimony, crimson, F.....lb.	.27 @
crimson, R.M.P. No. 3.....lb.	.50 @
7-A.....lb.	.35 @
Z-2.....lb.	.18 @
Sulphuret vermilion.....lb.	.37 1/2 @ .45
Du Pont R. I.....100 lbs.	@
R. S.....100 lbs.	@
Brilliant A. C.....100 lbs.	@
Iron Oxides	
bright red pure domestic.....lb.	.12 @
bright red pure English.....lb.	.14 @ .16
bright red reduced Eng.....lb.	.10 @ .12
bright red reduced domestic.....lb.	.10 @
Indian (maroon), red pure domestic.....lb.	.11 @
Indian (maroon), red pure English.....lb.	.12 @ .14
Indian (maroon), red reduced English.....lb.	.08 1/2 @ .10
Indian (maroon), red reduced domestic.....lb.	.08 @
Oximony.....lb.	.13 1/4 @
Spanish red oxide.....lb.	.04 @
Venetian reds.....lb.	.02 1/4 @ .05 1/4
Vermilion, English quick-silver.....lb.	1.62 @

## Colors—(Continued)

## WHITE

Albath	lb.	@
Lithopone	lb.	\$0.05½ @ \$0.06¼
Azolith	lb.	.05½ @ .06¼
Grasselli	lb.	.05½ @ .06¼
Sterling	lb.	.06¼ @
Zinc Oxide		
AAA (lead free)	lb.	.07½ @
Aso (factory):		
ZZZ (lead free)	lb.	.07½ @ .07¾
ZZ (5% lead)	lb.	.06¼ @ .07¾
Z (8% lead)	lb.	.07½ @ .07¾
French Process		
Green seal	lb.	.11½ @ .11¾
Red seal	lb.	.10½ @ .10¾
White seal	lb.	.12½ @
Horse Head Brands		
Selected	lb.	@
Special	lb.	@
XX red	lb.	@
Lead Brands		
Lehigh	lb.	.07½ @ .07¾
Standard	lb.	.06¼ @ .07¾
Sterling	lb.	.07½ @ .07¾
Superior	lb.	.07½ @ .07¾
Palmerton Process		
Kadox, black	lb.	@
blue	lb.	@
red	lb.	@

## YELLOW

A. & W. yellow	lb.	2.00 @ 4.00
Arsenic	lb.	.48 @
Chrome	lb.	.17½ @ .18½
Du Pont N.	100 lbs.	@
Grasselli cadmium	lb.	1.50 @
Ochre, domestic	lb.	.02 @ .02½
imported	lb.	.03½ @ .04
Oxide, pure	lb.	.08½ @
Zinc, imp.	lb.	.24 @

## Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	21.85 @
(sacks l.c.l.)	ton	24.50 @
Filler	ton	@
Silicate	ton	25.00 @ 26.00
Ammonia carbonate	lb.	.12½ @ .13½
Asbestine	ton	13.50 @ 14.50
Barium, carbonate	ton	50.00 @
dust	lb.	.05 @ .06
Barytes, imported	ton	30.00 @
water ground and floated	ton	23.00 @ 25.00
Rasfor	lb.	.04½ @
Blanc fixe, dry	lb.	.04½ @ .04¾
pulp	ton	60.00 @
Carbon Black		
Aeroflot arrow	lb.	.08 @ .12½
Compressed	lb.	.08½ @ .12½
Uncompressed	lb.	.08 @ .12
Micronex	lb.	.09 @ .13
Carrara filler	ton	26.00 @
Catalpo (factory)	lb.	@
Chalk	lb.	.02½ @ .05½
Clay, blue ribbon (c. l.)		
factory	ton	14.00 @
Blue Ridge, dark	ton	9.00 @
light	ton	12.00 @
China	lb.	.01½ @
Dixie	ton	20.00 @
Langford	ton	12.00 @

## New York Quotations

July 26, 1926

## Compounding Ingredients—(Continued)

Mineral Flour (Florida)	ton	\$20.00 @ \$23.00
Para	ton	12.00 @ 15.00
Suprex	ton	13.00 @ 26.00
Tuscan	ton	12.00 @
White floss	ton	17.00 @ 20.00
Cotton flock, black	lb.	.11½ @ .12½
light-colored	lb.	.12 @ .14
white	lb.	.14 @ .26
Cotton linters clean mill run	lb.	@
Fossil flour	lb.	.02½ @
Glue, high grade	lb.	.16 @ .23
medium	lb.	.18 @ .24
low grade	lb.	.15 @ .17
Infusorial earth	lb.	.02½ @
Mica, amber (factory)	lb.	.05 @
Diamond	lb.	.05 @ .06
Pumice stone, powd.	lb.	.02½ @ .04
Rotten stone (bbils.)	lb.	.02½ @ .10
Slate flour (factory c. l.)	ton	.09½ @ .10
Soap bark, cut	ton	15.00 @ 22.00
Soapstone	ton	2.50 @
Sodium bicarb.	100 lbs.	@
Starch, pcwd. corn		
Buffalo	(bbils.) 100 lbs.	3.39 @ 3.49
Buffalo	(bags) 100 lbs.	3.12 @ 3.22
Talc, domestic	ton	25.00 @
French	ton	18.00 @ 45.00
Terra blanche	ton	25.00 @ 30.00
Whiting:		
Commercial	100 lbs.	.85 @ 1.00
English, clifstone	100 lbs.	1.50 @
Quaker	ton	13.00 @
Sussex	ton	8.00 @
Westminster Brand	100 lbs.	@
Witco (c.l.) (factory)	ton	12.00 @
Whiting, imp. chalk	100 lbs.	.90 @ 1.00
Paris White, Eng. Clifstone	100 lbs.	1.50 @ 2.00
Wood flour	ton	@
Pulp, XXX (factory)	ton	35.00 @
X (factory)	ton	25.00 @

## Mineral Rubber

Genasco (factory)	ton	50.00 @ 52.00
Gilsonite (factory)	ton	37.14 @ 39.65
Granulated M. R.	ton	33.00 @ 38.00
Hydrocarbon, hard	ton	29.00 @ 35.00
Hydrocarbon, soft	ton	29.00 @ 35.00
Ohmic Kapak, M. R.	ton	@
K-4	ton	@
320/340 m. p. hydrocarbon	ton	47.00 @ 52.00
300/310 m. p. hydrocarbon	ton	42.00 @ 47.00
Paracura (factory)	ton	70.00 @ 72.50
Pioneer, M. R. solid (fac.)	ton	42.00 @ 44.00
M. R. granulated	ton	52.00 @ 54.00
Robertson, M. R. solid	ton	35.00 @ 75.00
(factory)	ton	42.00 @ 80.00
M. R. gran. (factory)	ton	@

## Oils (Softeners)

Castor, No. 1, U. S. P.	lb.	.12½ @
No. 3, U. S. P.	lb.	.12½ @
Corn, crude (bbils.)	lb.	.14 @
Cotton, summer yellow	lb.	.15 @
Cycline	gal.	.28 @
Glycerine	lb.	.32 @
Linseed, raw	lb.	.12 @
Liquid rubber	lb.	@
Moldrite	lb.	.06 @
Palm lagus	lb.	.10½ @
niger	lb.	.09½ @
Peanut, crude	lb.	.14½ @
refined	lb.	.16 @
Petrolatum, standard	lb.	.06 @ .08
sticky	lb.	.08 @ .10
Pine, steam distilled	gal.	.64 @

## Oils (Softeners)—(Continued)

Plastone	lb.	@
Rapeseed, refined	gal.	\$0.94 @
Rosin	gal.	.75 @
Synthetic	lb.	.06 @
Tackol	lb.	.12 @
Tar	gal.	.46 @
Virol	lb.	.10 @

## Resins and Pitches

Pitch, Burgundy	lb.	@
Coal tar	bbil.	@
Fluxol hardwood	lb.	.04 @
Pine tar, retort	bbil.	18.00 @
ponto	lb.	@
Rosin, K (bbil.)	280 lbs.	14.95 @
strained (bbil.)	280 lbs.	14.80 @
Shellac, fine orange	lb.	.70 @
Tar, pine, retort	bbil.	@
kiln	bbil.	16.00 @

## Solvents

Benzol (90%, 7.21 lbs. gal.)	gal.	.30 @
pure	gal.	@
Carbon bisulphide (10.81 lbs. gal.)	99.9% pure (drums)	lb. .05½ @ .06¼
tetrachloride (13.28 lbs. gal.)	99.7% pure (drums)	lb. .06¼ @ .08
Gasoline		
No. 303		
Tankcars	gal.	.22 @
Drums, c. l.	gal.	.25 @
Drums, l. c. l.	gal.	.28 @
Naphtha		
65° Bc., 112° 324°	gal.	.20 @
70° Bc., 114° 314°	gal.	.20½ @
71° Bc., 112° 304°	gal.	.21 @
Turpentine, spirits	gal.	.89 @
wood, steam distilled	gal.	.86 @

## Substitutes

Black	lb.	.08½ @ .14
Brown	lb.	.08½ @ .16
White	lb.	.08½ @ .17

## Vulcanizing Ingredients

Sulphur chloride	lb.	.04 @
Soft rubber, 100%		
pure (c.l.)	100 lbs.	@
(l.c.l.)	100 lbs.	@
Sulphur, Brooklyn brands		
Refined velvet (bbils.)	240 lbs.	@
(bags)	150 lbs.	@
Superfine flour (bbils.)	100 lbs.	2.55 @ 3.10
(bags)	100 lbs.	2.20 @ 2.75
Tire brand, superfine	100 lbs.	@
Tube brand, velvet	100 lbs.	@
(See also Colors—Antimony)		

## Waxes

Wax, beeswax, white, com.	lb.	.55 @
carnauba	lb.	.38 @ .50
ceresine, white	lb.	.12½ @
montan	lb.	.07 @ .07½
ozokerite, black	lb.	.30 @
green	lb.	.32 @
Paraffin		
122/124 white crude scale	lb.	.05½ @
124/126 white crude scale	lb.	.06 @
120/122 fully refined	lb.	.06¼ @
125/127 fully refined	lb.	.06¼ @

## NU-GUM RECLAIM

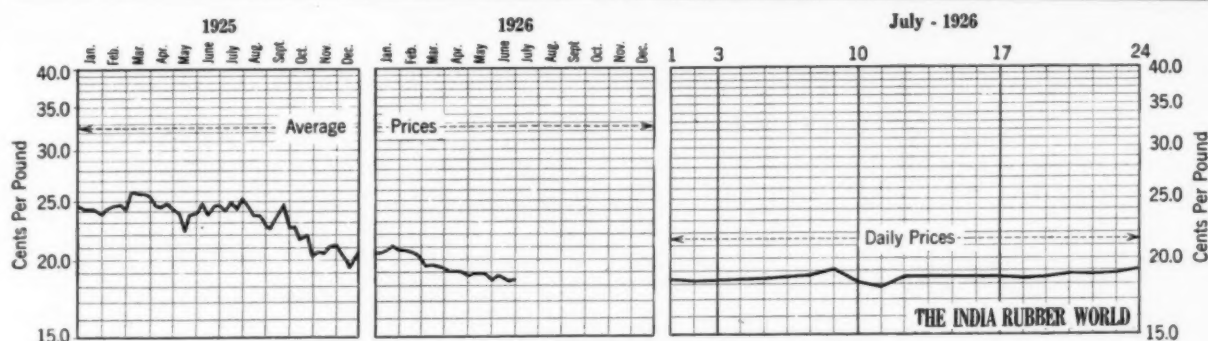
A specially high quality of reclaimed rubber is now marketed under the name of Nu-gum. It is made by patented process from No. 1 floating inner tubes; contains no additions of oils or compounding ingredients of any kind; no free sulphur; has acetone extraction 7 per cent, ash 7.1 per cent; rubber content 87 to 88 per cent, and specific gravity, 0.98. The tensile strength and elongation of this reclaim are said to be particularly high, and the process of devulcanization employed in making it insures absolute uniformity.

It is recommended for tires, tubes, mechanical goods, tiling, frictions, toys and hard rubber goods. By suitably adjusting the proportions of zinc oxide and carbon black in tire tread stocks, the makers claim that 35 per cent of the crude rubber can be replaced by Nu-gum without impairment of the abrasive resistance of the treads.

## "THURBERIA WEEVIL" APPEARS IN ARIZONA

A conference under the auspices of the Department of Agriculture has been held in Washington, D. C., and attended by cotton growers and state officials, for the purpose of discussing measures for combating the Thurberia weevil. This pest has lately appeared in Arizona, and is threatening to injure the cotton production of that state. Proposed regulations would restrict the exportation of cotton from the infested area.

DURING APRIL ARGENTINA LED OTHER COUNTRIES IN THE NUMBER of American automobile tires imported, taking 17,434, value \$250,080; the number of inner tubes reaching 24,669, value \$58,011; solid tires totaling 566, value \$25,350. It is interesting to note the corresponding figures for April, 1925, or 18,339 casings, value \$173,098; solid tires, 295, value \$10,482; the value for inner tubes being \$23,391.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

## The Market for Cotton and Other Fabrics

### New York

**AMERICAN COTTON.** The July market for spot middlings was dull. On July 2 the price was 18.25 cents and the following week rallied to 19.05 cents. In the two days following July 9, the market reacted to the government crop report by dropping to 17.85 cents, then turned stronger on the continuation of unfavorable weather and gained 125 points advance in the next two weeks. The prices at the close of each successive week were as follows: July 10, 18.10 cents; July 17, 18.55 cents and July 24, 19.10 cents.

The government crop report placed the condition of the crop at 75.4 for the end of June which was slightly below expectations. The area under cultivation was reported as 48,898,000 acres as compared with 48,090,000 acres at the end of June, 1925. The indicated yield is given as 15,635,000 bales on this basis.

The influence now menacing the development of the crop is the insect damage, the possibilities of which have been promoted by the wet weather of June. The condition needed to aid in the control of insects is hot dry weather from now on.

**PIMA COTTON.** The acreage planted to Pima is about the same as usual and is estimated at 25,000 acres. The cotton is reported in excellent condition. The succession of cool nights has caused the bolls to develop heavier than usual.

**EGYPTIAN COTTON.** Egyptian grades have weakened and moved downward in sympathy with the prices of American cotton in spite of the bull efforts to sustain prices. The decline was relatively greater for Saks than for Uppers. The market was

wholly in the buyers' favor but there was absence of local Egyptian interest. July exports will total about 45,000 bales. On July 24 Medium Sakellaridis was 30½ cents; Medium Uppers, 23½ cents.

### Cotton Fabrics

**DUCKS, DRILLS AND OSNABURGS.** Cotton is higher by \$10 a bale and goods are in better demand. There is a general request for spot delivery with comparatively few goods to meet calls for specialties. Some consumers, very wisely, are making provision for a part of their future needs. Belting and hose duck were very active in July.

**RAINCOAT FABRICS.** Raincoat fabric prices remain unchanged from last month. The raincoat business is steadily improving each week and a very large business is assured for this fall.

**SHEETINGS.** The market has gained in firmness. During the third week of July fairly good quantities of light weight sheetings were sold. The distribution was among several different lines of business principally for spot and nearby deliveries.

**TIRE FABRICS.** Fabric mills have for some weeks been operating on curtailed schedules. Just previous to the holidays the market showed some activity with more interest in off-color cottons. The overdue tire price reductions were announced July 6 but were not promptly followed by commitments for fabrics. The demand continued limited and fabric shipments were deferred. This condition was reversed about the middle of the month when deliveries on contracts were hastened and a large distributor business resulted.

### Drills

38-inch 2.00-yard	.....yard	\$0.17 @
40-inch 3.47-yard	.....	.09½ @
52-inch 1.90-yard	.....	.18½ @
60-inch 1.52-yard	.....	.22½ @

### Ducks

38-inch 2.00-yard	.....yard	.17 @
40-inch 1.47-yard	.....	.23½ @
72-inch 16.66-ounce	.....	.38½ @
72-inch 17.21-ounce	.....	.39½ @

### MECHANICAL

Hose and belting	.....pound	.32 @
Specials	.....	.36 @

### TENNIS

52-inch 1.35-yard	.....yard	.27 @
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### Hollands

DEAD FINISH		
Standard, 36-inch	.....yard	.19½ @
42-inch	.....	.23½ @

### RED SEAL

36-inch	.....	.15½ @
40-inch	.....	.16½ @
50-inch	.....	.26 @

### FLAT FINISH

Imperial, 36-inch	.....	.15½ @
40-inch	.....	.17½ @

### GOLD SEAL

40-inch	.....	.23 @
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### New York Quotations

July 26, 1926

#### Osnaburgs

40-inch 2.35-yard	.....yard	\$0.14½ @
40-inch 2.48-yard	.....	.13½ @
40-inch 3.00-yard	.....	.11½ @
37-inch 2.42-yard	.....	.14½ @

#### Raincoat Fabrics

##### COTTON

Bombazine 64 x 60	.....yard	.11½ @
Bombazine 60 x 48	.....	.10½ @
Plaids 60 x 48	.....	.11 @
Plaids 56 x 44	.....	.10½ @
Surface prints 60 x 48	.....	.11½ @
Surface prints 64 x 60	.....	.12½ @

#### Sheetings, 40-inch

48 x 48, 2.50-yard	.....yard	.12½ @
48 x 48, 2.85-yard	.....	.11 @ .11½
64 x 68, 3.15-yard	.....	.12½ @ .12½
48 x 60, 3.60-yard	.....	.09 @ .10
48 x 44 3.75-yard	.....	.09 @ .09½

#### Sheetings, 36-inch

48 x 48, 5.00-yard	.....yard	.07½ @ .07½
40 x 40, 6.15-yard	.....	.06 @ .06½

### Tire Fabrics

#### SQUARE WOVEN 17½-ounce

Egyptian, karded	.....pound	\$0.48 @
Peeler, karded	.....	.41 @

#### CORD 23/5/3

Egyptian, combed	.....pound	.56 @
Egyptian, karded	.....	.48 @
Peeler, combed, 1½-in.	.....	.43 @
Peeler karded, 1½-in.	.....	.43 @

#### CORD 23/4/3

Peeler, karded	.....pound	.44 @
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#### CORD 23/3/3

Peeler, karded	.....pound	.50 @
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#### CORD 15/3/3

Peeler, karded	.....pound	.41 @
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#### CORD 13/3/3

Peeler, karded	.....pound	.40 @
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#### LENO BREAKER

8-oz. Peeler, karded	.....pound	.41 @
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10-oz. Peeler, karded	.....	.41 @
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#### CHAFER

8.25-oz. Peeler, karded (2 ply)	.....pound	.46 @
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9.5-oz. Peeler, karded (4-ply)	.....	.43 @
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12-oz. Peeler, karded	.....	.43 @
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14-oz. Peeler, karded	.....	.41 @
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## The Cotton Outlook

**M**EN of influence in the cotton industry are using their best efforts to further measures which in the present depressing conditions in the trade will tend toward improvement, and plans are being discussed by a committee of ten leading cotton manufacturers regarding the proposed Cotton Textile Institute. In stressing the need for greater cooperation in the industry, former United States Senator Henry F. Lippitt, a member of the above-mentioned committee, stated that a reasonable and lawful stabilization in production and prices that will be beneficial both to the consumer and the producer was the aim sought by cotton men interested in the new movement.

It is not possible or desirable to abolish price fluctuations, Mr. Lippitt declared. It will benefit all concerned to avoid extremes of such fluctuations so that in times of distress prices will not be excessively depressed, nor in times of prosperity go so high as to produce overdevelopment.

Our industry is going through a period of unprecedented storm and distress, but it is not necessarily the time for hopeless discouragement. . . . We have had too much individuality and too little cooperation.

### Cotton Textile Institute Organized

The much debated Cotton Textile Institute became a reality and was formally organized at a meeting held July 21 at the Hotel Biltmore, New York, N. Y. Executives then elected included the following: Henry F. Lippitt, president; Stuart W. Cramer and Robert Amory, vice-presidents; William F. Garcelon, temporary secretary; and Gerrish H. Milliken, treasurer. Of the fifty-four mill executives appointed as members of the board of directors a number represent officials of tire fabric mills.

### Great Cotton Port Planned for New York

In an endeavor to make New York City one of the greatest cotton ports in the United States, the New York Cotton Exchange has unanimously authorized its board of managers to complete plans for a large warehouse development project on Staten Island Sound at Elizabeth, New Jersey. The plans call for the entering into a twenty-year contract between the Exchange and the Bayway Terminal with an expenditure of approximately \$5,000,000 by the latter organization. Every facility for the most modern and economic handling, accommodation, transportation and centralization of cotton coming into the port of New York will be provided by the terminal company, the plans also including minimum charges for the transportation, inspecting, compressing, and insuring of cotton. The Bayway Terminal now has facilities for handling and storing 60,000 bales of cotton and under the proposed contract with the Exchange these facilities would be increased to 100,000 bales within six months, 150,000 bales within one year and 200,000 bales by October 1, 1927.

In regard to the proposed development Samuel T. Hubbard, Jr., president of the New York Cotton Exchange, stated:

The plans embodied in the contract are the result of long and careful study of conditions affecting the cotton industry generally, and those who sponsor the plans believe that they will make the port of New York of far greater importance as a cotton market, both for the delivery of cotton on contract and spot cotton, than it has ever been before. This development will be of far-reaching importance, not only to New York and the South, but to the cotton industry all over the world. It should immeasurably increase the volume of cotton passing through the port of New York.

### Southern Warehouse Delivery

Meanwhile the question of Southern delivery is arousing much diversity of opinion, the advocates of such delivery contending that under the new plan there would be an elimination of the usual waste entailed in first shipping cotton to New York on contract and then reshipping it to the ultimate consumer. The point, however, is disputed by opponents of southern delivery who assert that New York offers better transportation facilities and a lower rate of insurance.

### More Estimates Concerning Cotton Crop and Acreage

Since the report made on July 2 by the Department of Agriculture regarding the area planted to cotton, which represented a total of 48,898,000 acres, and with abandonment computed, 47,153,000 acres, other estimates have appeared, notably that of the *Commercial and Financial Chronicle* at 48,158,000 acres, and the *Journal of Commerce*, 46,367,000 acres. The government estimate of the crop is also put at 15,635,000 bales, although private reports range from 15,400,000 to 15,700,000 bales. A still later government figure places the July 16 condition as 70.7 per cent of normal, and indicates a crop of 15,368,000 bales.

From a statement made by Alston H. Garside, director of cotton service in the Merchants National Bank of Boston, the following quotation is made:

Present prospects are that the world supply of American cotton for the coming season will be the largest in many years. With a probable carryover of about 6,250,000 bales and city crop, Mexican imports and other sundry supply totaling perhaps 250,000 bales, a crop of 14,000,000 would make a total supply of approximately 20,500,000, a crop of 15,000,000 would make a total supply of 21,500,000, and a crop of 16,000,000 would make a total supply of 22,500,000, exclusive of linters.

One must go back to 1920-21 to find a supply of American cotton approaching the probable amount which will be available for the coming season. In 1920 the carryover was 6,400,000 and the ginned crop and other supply totaled 13,600,000, making a total supply of 20,000,000. This was 500,000 bales less than the supply will be this season if the crop is 14,000,000 bales, 1,500,000 less than it will be if the crop is 15,000,000 bales, and 2,500,000 less than it will be if the crop is 16,000,000 bales.

### Standardizing Staple Lengths of American Cotton

It is understood that a conference in London of European and American cotton spinners is soon to be held, the purpose being to

**The following dealers in cotton goods for the rubber industry are listed in our Buyers' Directory. For complete information see Index to Advertisers on Page 110.**

Adams, H. J., Co., The, Akron, Ohio.  
Bibb Manufacturing Co., Macon, Georgia.  
Brighton Mills, Passaic, New Jersey.  
Callaway Mills, Inc., New York, N. Y.  
Curran & Barry, New York, N. Y.

Lane, J. H. & Co., New York, N. Y., and Chicago, Illinois.  
Lawrence & Co., New York, N. Y.  
Salmon Falls Manufacturing Co., Boston, Massachusetts.  
United States Knitting Co., Pawtucket, Rhode Island.  
Willingham Cotton Mills, Macon, Georgia.

consider measures regarding the standardization of staple lengths of American cotton. This subject was also under discussion at the recent convention in Atlanta of the American Cotton Shippers Association and later at a meeting of the Atlantic Cotton Association. During the twelfth International Cotton Congress the question of standards for staple lengths was also under consideration, the following resolution being then adopted:

This congress expresses its opinion that there should be a universal domination of staple lengths throughout the world, and urges the cotton exchanges of Europe and the United States of America, and the Department of Agriculture in the United States to come to an agreement on this question.

### New Cotton Standards Effective August 1

According to the Department of Agriculture, there has been a definite demand for low grade cottons of all lengths of staple, many spinners both in the northern and southern states having discovered that certain low grades could be substituted for the higher grades formerly considered necessary. Later reports mention six additional lengths of the government standards for American upland cotton and one additional length of American Egyptian cotton. This order, which becomes effective August 1, includes for American upland 1 1/32-inch, 1 3/32, 1 5/32, 1 7/32, 1 9/32, and 1 11/32. The additional length for American Egyptian is 1 9/16. The extra length standards, together with those now in effect, make a total of 17 lengths of staple for American upland cotton and four for American Egyptian.

### REPORT OF RIMS INSPECTED AND APPROVED BY THE TIRE AND RIM ASSOCIATION OF AMERICA, INC.

Rim Size	June, 1926		Six Months, 1926	
	Number	Per Cent	Number	Per Cent
<b>Motorcycle Rims</b>				
24 x 3.....	157	0.0	15,735	0.1
26 x 3.....	8,048	0.4	49,966	0.4
28 x 3.....	.....	.....	2,377	0.0
<b>Clincher Rims</b>				
30 x 3.....	.....	.....	2,302	0.0
30 x 3 1/2.....	165,069	7.8	1,784,849	14.2
31 x 4.....	.....	.....	15,609	0.1
<b>Balloon Rims</b>				
25 x 3 1/2.....	.....	.....	722	0.0
26 x 3 1/2.....	30,137	1.4	46,289	0.3
27 x 3 1/2.....	103	0.0	129	0.0
28 x 3 1/2.....	921,237	43.2	5,328,504	39.4
29 x 3 1/2.....	.....	.....	.....	.....
27 x 4.....	12	0.0	84	0.0
28 x 4.....	298,531	14.1	1,522,369	12.2
29 x 4.....	295,374	14.0	1,780,380	13.9
29 x 4 1/2.....	1,855	0.1	4,801	0.0
29 x 4 1/2.....	42,927	2.3	251,316	1.8
30 x 4 1/2.....	88,650	4.2	846,723	6.2
31 x 4 1/2.....	2,847	0.1	23,891	0.2
30 x 5.....	12,992	0.6	155,737	1.2
31 x 5.....	42,716	2.3	258,921	1.9
33 x 6.....	4,626	0.2	64,675	0.5
<b>High Pressure Rims</b>				
30 x 3 1/2 SS.....	18,105	0.9	82,983	0.6
32 x 3 1/2.....	206	0.0	4,866	0.0
31 x 4.....	.....	.....	10,183	0.1
32 x 4.....	3,357	0.2	89,261	0.7
33 x 4.....	197	0.0	4,175	0.0
34 x 4.....	.....	.....	.....	.....
32 x 4 1/2.....	47,586	2.3	232,641	1.7
33 x 4 1/2.....	100	.....	596	0.0
34 x 4 1/2.....	6,316	0.3	16,456	0.1
<b>Truck, 20-inch</b>				
30 x 5.....	87,673	4.2	363,598	2.8
32 x 5.....	11,681	0.5	115,348	0.8
34 x 7.....	9,388	0.4	26,217	0.2
36 x 8.....	1,821	0.1	5,690	0.0
40 x 10.....	.....	.....	189	0.0
<b>Truck, 24-inch</b>				
34 x 5.....	2,001	0.1	23,212	0.2
36 x 6.....	3,872	0.2	46,478	0.3
38 x 7.....	1,272	0.1	10,592	0.1
40 x 8.....	1,013	0.0	5,968	0.0
44 x 10.....	166	0.0	559	0.0
36 x 7.....	.....	.....	1,186	0.0
<b>Total</b>	<b>2,110,035</b>	<b>100.0</b>	<b>13,195,577</b>	<b>100.0</b>
	<b>Per Cent</b>		<b>Per Cent</b>	
Motorcycle.....	0.4	Motorcycle.....	0.5	
Clincher.....	7.8	Clincher.....	14.3	
Balloon.....	82.5	Balloon.....	77.6	
High Pressure.....	3.7	High Pressure.....	3.2	
Truck—20-inch.....	5.2	Truck—20-inch.....	3.8	
Truck—24-inch.....	0.4	Truck—24-inch.....	0.6	

NOTE—3,574 of the 26 x 3 motorcycle rims are 3" auto section.

## Metal Market Review

### New York

There has been improvement during July in the demand for the non-ferrous metals, due in part, according to *The Engineering & Mining Journal*, to the better statistical position of copper and zinc, and the speculative holding of lead in the London market. A sustained activity for the past eighteen months has also characterized the steel industry, with no signs at present of any decline in output.

**ALUMINUM.** Virgin metal, 98 to 99 per cent pure, continues to be quoted at 27 to 28 cents per pound, delivered.

**ANTIMONY.** The market has become stronger, while July-August shipments from China are quoted at about 13 cents.

**COPPER.** Prices for copper continue to advance, while a larger volume of business is being handled. The world production of copper during June amounted to 129,600 tons, according to the American Bureau of Metal Statistics, the total for May being 142,200 tons and April, 140,700 tons. In the United States the surplus stocks of refined copper are said to have shown during June a reduction of 4,000,000 pounds, following a decline of 3,000,000 pounds in May.

**LEAD.** While the prices for this metal abroad were continuing to indicate a steady advance, the American Smelting & Refining Co. announced during the third week of July a gain of fifteen points, or up to 8.65 cents a pound, New York. At present there is a very good demand for lead, this being particularly centered in August shipments.

**STEEL.** The steel industry is operating at slightly less than 80 per cent of capacity as compared with 60 per cent a year ago, while the production of steel ingots in the first six months of 1926 was 24,260,537 tons, as against 22,383,071 in the same period last year, a gain of 1,877,466 tons. According to the *Journal of Commerce*: "Not at any period in the last three years have prospects been so good at this time for a continuance of sustained output."

**TIN.** The domestic market has for some time remained dull, with buying confined principally to dealers. The London market however has continued strong, with prices slightly advanced.

**ZINC.** Sales during 1925 of zinc products reached an approximate value of \$250,000,000, while it is believed that present conditions in the industry point to a still larger figure for 1926. There is a good demand for zinc in the domestic market, with special inquiries for August and September shipments.

### Basic Metals

July 26, 1926

	Cents per pound
Aluminum, virgin, 98@99 per cent.....	27.00 @ 28.00
Antimony.....	14.00 @ 14.25
Copper—Lake, spot.....	14.25 @ 14.375
Electrolytic, spot.....	14.25 @ 14.35
Castings, refinery.....	13.625 @
Lead, spot, New York.....	8.50 @ 8.60
Lead, spot, East St. Louis.....	8.375 @ 8.50
Nickel, ingot, pound.....	35.00 @
Tin, spot.....	63.125 @
Zinc, spot, New York.....	7.80 @ 7.85
Zinc, spot, East St. Louis.....	7.45 @ 7.50

### Steel Wire

	Base per 100 lbs.
Bright, plain wire No. 9 gage.....	\$2.50 @
Annealed fence wire.....	2.65 @
Galvanized wire No. 9.....	3.10 @
Spring wire.....	3.50 @

### Copper Wire

BASE PRICE F. O. B. FACTORY

	Cents per pound
Bare copper wire.....	16.125 @
No. 6 B. & S. gage.....	16.125 @
No. 8 B. & S. gage.....	16.125 @
No. 14 B. & S. gage.....	17.125 @

THE OUTLOOK FOR THE SALE OF AMERICAN TIRES IN DAIREN, Manchuria, is said to be excellent, as American cars predominate. The roads are being steadily improved.

## United Kingdom Rubber Statistics

UNMANUFACTURED Crude Rubber From—	Imports		Five Months Ended May, 1926	
	May, 1926		May, 1926	
	Pounds	Value	Pounds	Value
Straits Settlements.....	9,003,700	£862,798	54,212,100	£7,041,217
Federated Malay States...	4,256,700	415,196	24,246,900	3,007,820
British India.....	737,800	75,480	5,335,900	734,574
Ceylon and Dependencies...	3,320,100	329,446	18,176,400	2,332,960
Other Dutch possessions in Indian Seas.....	702,000	72,268	5,708,200	752,186
Dutch East Indies (except other Dutch possessions in Indian Seas).....	1,808,300	176,269	10,609,200	1,342,933
Other countries in East In- dies and Pacific, not else- where specified.....	212,800	26,009	863,500	107,073
Brazil.....	928,800	87,290	4,852,500	627,942
Peru.....	1,700	170	63,300	5,830
South and Central America (except Brazil and Peru)	4,700	432	72,300	9,020
West Africa:				
French West Africa....	54,600	2,713	1,265,200	116,457
Gold Coast.....	82,300	4,446	556,300	40,880
Other parts of West Africa	35,300	2,124	907,900	98,131
East Africa, including Mada- gascar.....	31,600	1,503	679,200	79,122
Other countries.....	130,000	12,157	623,400	86,594
Totals.....	21,310,400	£2,062,301	128,172,300	£16,382,739
Waste and reclaimed rubber..	569,200	14,998	3,244,600	65,063
Gutta percha and balata....	572,400	68,358	3,585,500	500,976
Rubber substitutes.....	2,300	120	47,700	2,373
Totals.....	22,454,300	£2,145,777	135,050,100	£16,951,151

MANUFACTURED			
Boots and shoes.... <i>dos. pairs</i>	34,296	£66,718	190,180
Tires and tubes			
Pneumatic			
Outer covers.....		171,220	1,851,799
Inner tubes.....		28,156	280,981
Solid tires.....		15,687	136,632
Other rubber manufactures..		132,891	735,438
Totals.....		£414,672	£3,375,269

Exports			
UNMANUFACTURED			
Waste and reclaimed rubber..	1,045,800	£17,141	11,331,300
Rubber substitutes.....	41,500	945	467,800
Totals.....	1,087,300	£18,086	11,799,100
MANUFACTURED			
Boots and shoes.... <i>dos. pairs</i>	22,233	£28,657	93,934
Tires and tubes			
Pneumatic			
Outer covers.....		279,974	1,375,656
Inner tubes.....		54,305	288,803
Solid tires.....		35,704	188,983
Other rubber manufactures..		229,601	1,267,048
Totals.....		£628,241	£3,263,488

## Exports—Colonial and Foreign

UNMANUFACTURED Crude Rubber From—	May, 1926		Five Months Ended May, 1926	
	Pounds	Value	Pounds	Value
Russia.....	448,300	£73,071	5,396,100	£1,024,015
Sweden, Norway and Den- mark.....	213,300	26,473	1,030,100	146,160
Germany.....	701,900	73,711	4,752,200	647,814
Belgium.....	147,300	16,357	1,081,000	151,032
France.....	1,671,400	174,798	11,040,500	1,597,139
Spain.....	16,700	1,710	395,200	65,253
Italy.....	331,100	38,320	4,380,000	658,700
Other European countries..	87,500	11,227	584,200	90,065
United States.....	2,510,500	402,139	23,144,800	3,833,514
Canada.....			29,200	5,396
Other countries.....	10,400	1,694	278,800	50,573
Totals.....	6,138,400	£819,500	52,112,100	£8,269,661
Waste and reclaimed rubber..	12,300	496	121,800	3,967
Gutta percha and balata....	19,800	2,620	143,600	22,103
Rubber substitutes.....				
Totals.....	6,170,500	£822,616	52,377,500	£8,295,731
MANUFACTURED				
Boots and shoes.... <i>dos. pairs</i>	194	£589	2,142	£6,643
Tires and tubes				
Pneumatic				
Outer covers.....		32,290		152,355
Inner tubes.....		5,768		25,300
Solid tires.....		365		7,407
Other rubber manufactures..		5,069		30,461
Totals.....		£44,081		£222,166

British Malaya  
Rubber Exports

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that the amount of rubber exported from British Malaya in the month of June last totaled 30,624 tons. The amount of rubber imported was 11,764 tons of which 9,665 tons were declared as wet rubber. The following are comparative statistics:

	1925		1926	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January ...	19,183	10,132	30,452	10,237
February ..	21,622	10,071	30,440	8,306
March .....	26,836	13,399	35,012	14,800
April .....	22,414	11,750	23,727	10,565
May .....	26,567	12,579	31,231	10,604
June .....	27,894	14,706	30,624	11,764
Totals ..	144,616	73,037	181,486	66,276

## Distribution

The following is a comparative return of distribution of shipments during the months of May and June, 1926:

	May, 1926 Tons	June, 1926 Tons
United Kingdom .....	5,921	6,835
United States .....	20,422	18,976
Continent of Europe.....	2,999	2,822
British possessions .....	512	535
Japan .....	1,346	1,436
Other foreign countries.....	31	20
Totals .....	31,231	30,624

## Dealers' Stocks of Rubber

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that dealers' stocks of rubber on June 30, 1926, were in Singapore 16,732 tons, and in Penang 3,684 tons.

Landings, Deliveries and Stocks in London and Liver-  
pool as Returned by the Warehouses and Wharves  
During the Month of May, 1926

	Landed for May		Delivered for May		Stocks, May 31		
	Tons	Tons	Tons	Tons	1926	1925	1924
LONDON:							
Plantation .....	5,794	4,201	20,199	5,715	51,329		
Other grades.....	8	....	127	54	118		
LIVERPOOL:							
Plantation .....	1,280	1,459	11,081	1,557	14,270		
Para and Peruvian.....	216	186	398	185	716		
Other grades .....	....	....	2	23	210		
Totals tons, London and Liv- erpool .....	6,298	4,846	21,807	6,534	56,643		

†Official returns from the six recognized public warehouses.

Imports of Crude Rubber Into the United States by  
Customs Districts

	*May, 1926		Five Months Ended *May, 1926	
	Pounds	Value	Pounds	Value
Massachusetts .....	1,950,763	\$1,005,374	16,832,163	\$12,353,751
Buffalo .....	11,199	9,130	41,199	21,730
New York.....	61,960,538	34,441,091	376,441,661	265,143,109
Philadelphia .....	....	....	8,856	3,225
Maryland .....	1,279,399	659,984	2,732,188	1,852,610
New Orleans.....	1,997	676	3,230	1,318
Los Angeles.....	945,583	519,948	8,504,659	6,260,031
San Francisco.....	123,400	63,375	647,655	464,699
Oregon.....	22,400	12,086	123,580	97,914
Washington.....	246,400	103,936	963,200	645,624
Minnesota .....	67,200	35,957	67,200	35,957
Michigan .....	....	....	30,082	15,544
Ohio .....	....	....	67,225	42,948
Colorado .....	46,020	44,523	594,820	560,261
Totals .....	66,654,899	\$36,896,080	407,057,718	\$287,498,721

\*Including Latex Dry Rubber Content.

## COTTON AND RUBBER EXPEDITION REPORT

Three members of the Bureau of Plant Industry, United States Department of Agriculture, recently returned from a three months' expedition to the West Indies and South America, and report the discovery of several new types of cotton, a fact which may prove of value to the cotton-growing industry of the United States. Visits were made to Haiti and the Canal Zone, where experiments in rubber are being conducted, and also to Colombia and Ecuador, in order to make a special study of the Castilloa rubber tree.

## Official India Rubber Statistics for the United States

### Imports of Crude and Manufactured Rubber

	May, 1926		Eleven Months Ended May, 1926	
	Pounds	Value	Pounds	Value
<b>UNMANUFACTURED—Free</b>				
Crude rubber	66,654,899	\$36,896,080	866,187,970	\$569,066,974
Balata	18,454	10,261	1,172,190	565,656
Jelutong or Pontianak	1,671,373	292,046	13,457,681	1,962,646
Gutta percha	205,025	47,209	3,395,296	657,464
Guayule	942,950	261,121	9,768,797	2,546,748
Rubber scrap	1,566,095	83,111	35,536,596	1,448,477
Totals	71,058,796	\$37,589,828	929,518,530	\$576,247,965
Chicle	26,377	\$13,200	354,413	\$188,603
<b>MANUFACTURED—dutiable</b>				
Rubber belting	65,734	\$47,413	680,447	\$492,660
Rubber tires	580	6,734	11,871	128,083
Other rubber manufactures of substitutes for rubber		91,600		1,317,417
Totals	66,314	\$145,747	682,318	\$1,838,160

### Exports of Foreign Merchandise

	May, 1926		Eleven Months Ended May, 1926	
	Pounds	Value	Pounds	Value
<b>RUBBER AND MANUFACTURES</b>				
Crude rubber	2,355,965	\$1,558,987	34,304,681	\$25,016,766
Balata	24,826	12,973	514,672	295,956
Gutta percha and rubber substitutes and scrap	44,825	21,479	91,501	33,896
Rubber manufactures		6,902		179,672
Totals		\$1,600,341		\$25,526,280

### Exports of Domestic Merchandise

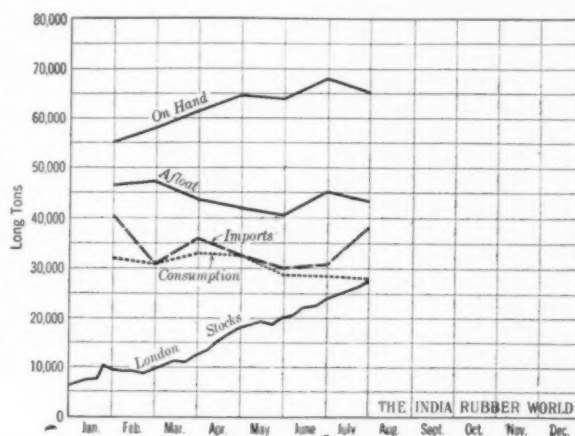
<b>MANUFACTURED</b>				
India rubber				
Reclaimed	885,558	\$104,669	10,324,901	\$1,248,355
Scrap and old	1,756,108	119,624	24,230,100	1,613,065
Footwear				
Boots	30,735	84,087	758,784	1,805,720
Shoes	53,666	54,036	1,127,045	1,006,278
Canvas shoes with rubber soles	487,469	359,166	4,501,103	3,376,247
Rubber water bottles and fountain syringes	9,881	7,970	249,885	185,625
Rubber gloves	5,916	20,200	129,653	1106,405
Other druggists' rubber sundries		43,414		934,528
Bathing caps	9,701	19,530	149,254	314,833
Hard rubber goods				
Electrical hard rubber goods	37,671	15,783	948,669	326,687
Other hard rubber goods		49,865		436,656
Tires				
Casings, automobile	111,567	2,247,055	1,457,408	22,834,771
Tubes, automobile	97,966	290,938	1,245,646	3,150,164
Other casings and tubes	9,183	21,765	75,793	245,198
Solid tires for automobiles and motor trucks				
Others	7,871	330,159	107,369	3,548,751
Tire accessories	174,920	59,664	1,819,670	542,524
Rubber and friction tape	85,538	28,917	1,357,938	1,118,138
Belting	335,822	240,749	3,768,679	2,441,869
Hose	502,942	217,392	5,467,422	2,245,162
Packing	179,814	97,592	2,010,292	983,153
Soles and heels	278,159	89,003	3,509,681	1,118,826
Thread	123,055	169,557	1,627,943	2,105,351
Rubber bands and erasers	61,658	51,598	1,254,579	1,204,509
Other rubber manufactures		241,311		2,074,757
Totals		\$5,124,849		\$54,307,970
Rubber toys, balls and balloons		\$54,346		\$943,631

\*Beginning Jan. 1, 1926.

## Rubber Imports, Consumption and Stocks

An epitome of the crude rubber supply for the current year is given in the tabulation and graph below:

Comparison of the figures for July with June in the table shows an estimated increase of 8,000 tons in imports; a decline of 600 tons in consumption; a gain of 540 tons in stocks on hand; about 2,100 tons more afloat; and London stocks gaining in the month about 4,000 tons. Singapore and Penang stocks as of May 1 have been added. These stocks have been about 16,000 tons monthly since the beginning of this year and will practically offset the next reduction.



Graph of U. S. Crude Rubber Imports, Consumption and Stocks

tion in exportable allowance should one take effect in August.

Taken as a whole these statistics of the various stocks indicate that the world's visible supply of crude rubber on August 1 is in the vicinity of 155,000 tons or practically one-third of the world's production for 1925. This situation and the increasing availability of reclaimed rubber, which is offsetting the lessened average monthly consumption of crude, explain why the rubber market is dull and there is so little apparent concern as to the 20 per cent restriction impending August 1.

### United States Crude Rubber Imports, Consumption and Stocks

	Imports Tons	Con- sumption Tons	Stocks		London Tons	Singapore and Penang Tons
			On Hand Tons	Afloat Tons		
1925						
Twelve months...	388,000	385,000	51,000*	48,000*	.....	.....
1926						
January	40,500	32,000	55,000	46,300	10,100	15,726†
February	31,000	31,000	58,000	47,000	9,100	13,653
March	36,000	33,000	61,500	43,500	12,800	18,389
April	32,700	32,500	64,400	41,900	18,500	16,328
May	30,000	29,000	64,000	40,300	20,200	16,848
June	30,000	28,600	60,460	40,907	23,800	.....
July (estimated)	38,000	28,000	65,000	43,000	††27,857	.....

\* December 31, 1925.

† The first of each month.

†† July 24, 1926.

### United States Crude and Waste Rubber Imports for 1926 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total		Balata	Miscellaneous	Waste
							1926	1925			
January	36,372	856	791	515	153	10	38,697	29,960	94	607	1,227
February	31,832	1,548	227	250	204	6	34,067	23,456	19	728	729
March	40,177	1,426	334	256	482	2	42,677	33,914	30	1,264	324
April	30,766	854	164	392	494	8	32,678	27,231	35	864	216
May	27,915	1,431	199	449	417	..	30,411	36,889	52	932	173
June	27,915	960	246	568	418	..	30,107	30,337	41	1,076	208
Totals, 6 months, 1926	194,977	7,075	1,961	2,430	2,168	26	208,637	.....	271	5,471	2,877
Totals, 6 months, 1925	169,399	8,089	1,576	1,158	1,528	37	.....	181,787	196	6,355	1,201

Compiled from statistics supplied by the Rubber Association of America, Inc.

## Crude Rubber Arrivals at New York as Reported by Importers

## Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases		Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
JUNE 15. By "Oswald," Brazil.						JUNE 28. By "Franconia," London.					
Paul Bertuch & Co., Inc.	106	...	40	4	...	Poel & Kelly, Inc.	198	...	...	...	...
JUNE 22. By "Laconia," London.						JULY 9. By "Justin," Brazil.					
Poel & Kelly, Inc.	...	...	...	98	...	H. A. Astlett & Co., Inc.	...	...	107	...	...
JUNE 22. By "Thespis," Brazil.						Paul Bertuch & Co., Inc.	...	...	40	90	...
Paul Bertuch & Co., Inc.	...	...	...	260	...	General Rubber Co., Inc.	...	3	66	...	27
General Rubber Co., Inc.	172	3	136	328	18	L. Littlejohn & Co., Inc.	...	...	38	43	...
L. Littlejohn & Co., Inc.	62	...	...	385	...	Meyer & Brown, Inc.	...	...	...	...	...
Meyer & Brown, Inc.	156	...	...	...	...	Poel & Kelly, Inc.	109	...	78	65	...
Poel & Kelly, Inc.	156	...	101	23	...						

## Plantations

	CASES		CASES		CASES
JUNE 10. By "Reliance," Far East.		JUNE 21. By "Minnekahda," Europe.		JULY 2. By "City of Newcastle," Far East.	
Charles T. Wilson Co., Inc.	255	H. A. Astlett & Co., Inc.	214	H. A. Astlett & Co., Inc.	14
† Arrived at Boston.		General Rubber Co., Inc.	1,114	General Rubber Co., Inc.	303
† Arrived at Los Angeles.		L. Littlejohn & Co., Inc.	57	Meyer & Brown, Inc.	103
JUNE 13. By "Volendam," Far East.		JUNE 21. By "Pres. Wilson," Far East.		Poel & Kelly, Inc.	240
H. Muehlstein & Co., Inc.	203	H. A. Astlett & Co., Inc.	196	JULY 2. By "Steel Worker," Far East.	
Charles T. Wilson Co., Inc.	25	JUNE 21. By "Rotterdam," Far East.		H. A. Astlett & Co., Inc.	812
JUNE 14. By "Minnewaska," London.		General Rubber Co., Inc.	150	Baird Rubber & Trading Co., Inc.	961
General Rubber Co., Inc.	239	H. Muehlstein & Co., Inc.	82	General Rubber Co., Inc.	7,031
Charles T. Wilson Co., Inc.	526	JUNE 21. By "West Faralon," Far East.		Adolph Hirsch & Co., Inc.	150
JUNE 14. By "Seythian," London.		Poel & Kelly, Inc.	2,200	Hood Rubber Co., Inc.	144
Charles T. Wilson Co., Inc.	530	JUNE 22. By "American Farmer," London.		L. Littlejohn & Co., Inc.	822
JUNE 16. By "Gaelic Prince," Far East.		Charles T. Wilson Co., Inc.	169	Meyer & Brown, Inc.	742
H. A. Astlett & Co., Inc.	803	JUNE 22. By "Laconia," London.		H. Muehlstein & Co., Inc.	599
Baird Rubber & Trading Co., Inc.	1,093	Poel & Kelly, Inc.	99	Poel & Kelly, Inc.	629
General Rubber Co., Inc.	5,001	Charles T. Wilson Co., Inc.	27	Rogers Brown & Crocker Bros., Inc.	181
Haldane Bierrie & Co., Inc.	384	JUNE 23. By "Northwestern Miller," London.		Charles T. Wilson Co., Inc.	751
Hood Rubber Co., Inc.	3,383	General Rubber Co., Inc.	765	JULY 3. By "City of Madrid," Far East.	
L. Littlejohn & Co., Inc.	3,704	JUNE 25. By "City of Auckland," Far East.		H. A. Astlett & Co., Inc.	23
Meyer & Brown, Inc.	1,916	H. A. Astlett & Co., Inc.	874	General Rubber Co., Inc.	50
Poel & Kelly, Inc.	440	Baird Rubber & Trading Co., Inc.	1,669	Poel & Kelly, Inc.	23
Raw Products Co., Inc.	540	General Rubber Co., Inc.	11,043	Rogers Brown & Crocker Bros., Inc.	112
Rogers Brown & Crocker Bros., Inc.	1,899	Haldane Bierrie & Co., Inc.	217	JULY 3. By "Diomed," Far East.	
Charles T. Wilson Co., Inc.		Hood Rubber Co., Inc.	1,144	H. A. Astlett & Co., Inc.	927
JUNE 17. By "Kabinga," Far East.		L. Littlejohn & Co., Inc.	5,759	Baird Rubber & Trading Co., Inc.	3,317
L. Littlejohn & Co., Inc.	658	Meyer & Brown, Inc.	5,458	Bowring & Co., Inc.	248
Meyer & Brown, Inc.	13	Meyer & Brown, Inc.	892	General Rubber Co., Inc.	5,182
JUNE 17. By "Pres. Hayes," Far East.		H. Muehlstein & Co., Inc.	825	Haldane Bierrie & Co., Inc.	800
H. A. Astlett & Co., Inc.	1,468	Poel & Kelly, Inc.	696	Hood Rubber Co., Inc.	43
Baird Rubber & Trading Co., Inc.	1,783	Poel & Kelly, Inc.	2,448	L. Littlejohn & Co., Inc.	3,372
Paul Bertuch & Co., Inc.	176	Raw Products Co., Inc.	322	Meyer & Brown, Inc.	5,141
General Rubber Co., Inc.	3,871	Charles T. Wilson Co., Inc.	793	Meyer & Brown, Inc.	250
Haldane Bierrie & Co., Inc.	1,225	JUNE 28. By "Franconia," London.		H. Muehlstein & Co., Inc.	350
L. Littlejohn & Co., Inc.	1,161	Poel & Kelly, Inc.	51	Poel & Kelly, Inc.	1,050
Meyer & Brown, Inc.	3,434	Charles T. Wilson Co., Inc.	195	Poel & Kelly, Inc.	3,638
H. Muehlstein & Co., Inc.	1,253	JUNE 28. By "Lancastria," London.		Raw Products Co., Inc.	106
Poel & Kelly, Inc.	1,620	H. A. Astlett & Co., Inc.	122	Rogers Brown & Crocker Bros., Inc.	1,035
Rogers Brown & Crocker Bros., Inc.	360	Poel & Kelly, Inc.	409	Charles T. Wilson Co., Inc.	2,081
Charles T. Wilson Co., Inc.	752	JUNE 28. By "La Savoie," London.		JULY 5. By "American Shipper," London.	
JUNE 18. By "Nieuw Amsterdam," Amsterdam.		General Rubber Co., Inc.	26	Charles T. Wilson Co., Inc.	1,755
General Rubber Co., Inc.	85	JUNE 28. By "Minnetonka," London.		JULY 6. By "Atlantic City," Far East.	
Charles T. Wilson Co., Inc.	38	Baird Rubber & Trading Co., Inc.	42	H. A. Astlett & Co., Inc.	404
JUNE 19. By "Robert Dollar," Far East.		General Rubber Co., Inc.	531	Baird Rubber & Trading Co., Inc.	1,570
Poel & Kelly, Inc.	1,138	L. Littlejohn & Co., Inc.	100	General Rubber Co., Inc.	1,120
JUNE 20. By "Carenia," London.		Meyer & Brown, Inc.	49	Meyer & Brown, Inc.	1,307
Baird Rubber & Trading Co., Inc.	265	Poel & Kelly, Inc.	100	Meyer & Brown, Inc.	50
General Rubber Co., Inc.	50	Rogers Brown & Crocker Bros., Inc.	341	H. Muehlstein & Co., Inc.	292
L. Littlejohn & Co., Inc.	428	Charles T. Wilson Co., Inc.	1,168	Poel & Kelly, Inc.	519
Meyer & Brown, Inc.	75	JUNE 28. By "West Cajoot," Far East.		Rogers Brown & Crocker Bros., Inc.	768
Poel & Kelly, Inc.	569	Poel & Kelly, Inc.	1400	Charles T. Wilson Co., Inc.	312
JUNE 20. By "Tyndareus," Far East.		JULY 1. By "Buyo Maru," Singapore.		JULY 6. By "Carmania," London.	
H. A. Astlett & Co., Inc.	1,360	Baird Rubber & Trading Co., Inc.	102	H. A. Astlett & Co., Inc.	75
JUNE 21. By "Baltic," Europe.		JULY 1. By "Pres. Polk," Far East.		General Rubber Co., Inc.	50
L. Littlejohn & Co., Inc.	50	H. A. Astlett & Co., Inc.	1,210	Poel & Kelly, Inc.	632
JUNE 21. By "Belfast Maru," Far East.		Baird Rubber & Trading Co., Inc.	2,230	JULY 6. By "Lapland," Europe.	
H. A. Astlett & Co., Inc.	1,318	Paul Bertuch & Co., Inc.	20	H. A. Astlett & Co., Inc.	30
Baird Rubber & Trading Co., Inc.	275	General Rubber Co., Inc.	2,581	JULY 6. By "Samaria," London.	
General Rubber Co., Inc.	2,116	Haldane Bierrie & Co., Inc.	50	Charles T. Wilson Co., Inc.	70
L. Littlejohn & Co., Inc.	1,692	Hood Rubber Co., Inc.	492	JULY 6. By "Saparoa," Far East.	
Meyer & Brown, Inc.	185	L. Littlejohn & Co., Inc.	2,190	H. A. Astlett & Co., Inc.	618
H. Muehlstein & Co., Inc.	406	Meyer & Brown, Inc.	3,430	Baird Rubber & Trading Co., Inc.	100
Poel & Kelly, Inc.	863	Meyer & Brown, Inc.	200	General Rubber Co., Inc.	4,225
Raw Products Co., Inc.	159	H. Muehlstein & Co., Inc.	250	L. Littlejohn & Co., Inc.	794
Rogers Brown & Crocker Bros., Inc.	205	Poel & Kelly, Inc.	870	Meyer & Brown, Inc.	1,083
Charles T. Wilson Co., Inc.	445	Rogers Brown & Crocker Bros., Inc.	242	H. Muehlstein & Co., Inc.	65
JUNE 21. By "Hague Maru," Far East.		Charles T. Wilson Co., Inc.	290	Poel & Kelly, Inc.	1,509
Poel & Kelly, Inc.	1,148	JULY 1. By "Wray Castle," Far East.		Raw Products Co., Inc.	66
JUNE 21. By "Maharatta," Far East.		H. A. Astlett & Co., Inc.	751	Charles T. Wilson Co., Inc.	533
General Rubber Co., Inc.	2,296	Baird Rubber & Trading Co., Inc.	1,438	JULY 8. By "Clan MacNair," Far East.	
Hood Rubber Co., Inc.	282	General Rubber Co., Inc.	11,003	H. A. Astlett & Co., Inc.	11
L. Littlejohn & Co., Inc.	400	Haldane Bierrie & Co., Inc.	750	General Rubber Co., Inc.	280
Meyer & Brown, Inc.	56	L. Littlejohn & Co., Inc.	1,492	L. Littlejohn & Co., Inc.	633
H. Muehlstein & Co., Inc.	178	Meyer & Brown, Inc.	3,651	Poel & Kelly, Inc.	116
Poel & Kelly, Inc.	26	Meyer & Brown, Inc.	195	JULY 8. By "Malakand," Far East.	
Raw Products Co., Inc.	330	H. Muehlstein & Co., Inc.	596	H. Muehlstein & Co., Inc.	425
Charles T. Wilson Co., Inc.	401	Poel & Kelly, Inc.	2,922	Poel & Kelly, Inc.	64
		Raw Products Co., Inc.	375	Rogers Brown & Crocker Bros., Inc.	112
		Rogers Brown & Crocker Bros., Inc.	230	Charles T. Wilson Co., Inc.	392
		Charles T. Wilson Co., Inc.	732	JULY 8. By "Steel Mariner," Far East.	
				General Rubber Co., Inc.	1,635

\* Arrived at Boston.

† Arrived at Los Angeles.

Cameta  
Cases...  
...  
...  
...  
27CASES  
East.14  
303  
103  
240812  
961  
7,031  
150  
\*144  
822  
742  
599  
629  
181  
75123  
50  
23  
112927  
3,317  
248  
5,182800  
\*43  
3,372  
5,141  
\*2503,500  
3,638  
106  
1,035  
2,081

1,755

404  
1,570  
20  
1,1201,307  
50  
292  
519  
768  
312

75

50

632

30

70

618

100

225

794

\*083

509

66

533

11

280

633

116

425

64

112

392

335

JULY 10. By "Langton Hall," Far East.		CASES
H. A. Astlett & Co., Inc.	1,057	
Baird Rubber & Trading Co., Inc.	736	
Bowring & Co.	70	
General Rubber Co.	3,289	
Haldane Bierrie & Co., Inc.	350	
Hood Rubber Co.	*91	
L. Littlejohn & Co., Inc.	1,793	
Meyer & Brown, Inc.	3,617	
H. Muehlstein & Co., Inc.	848	
Poel & Kelly, Inc.	2,349	
Raw Products Co.	334	
Charles T. Wilson Co., Inc.	626	

JULY 12. By "Minnewaska," Far East.		CASES
General Rubber Co.	106	
Poel & Kelly, Inc.	17	
Charles T. Wilson Co., Inc.	1,066	

JULY 12. By "Scythia," London.		CASES
Charles T. Wilson Co., Inc.	183	

JULY 12. By "Tuscania," London.		CASES
General Rubber Co.	82	
Poel & Kelly, Inc.	338	

\*Arrived at Boston.

\*Arrived at Los Angeles.

JULY 13. By "Silverfir," Far East.		CASES
H. A. Astlett & Co., Inc.	146	
Baird Rubber & Trading Co., Inc.	326	
L. Littlejohn & Co., Inc.	1,144	
Meyer & Brown, Inc.	324	
Poel & Kelly, Inc.	271	
Charles T. Wilson Co., Inc.	89	

JULY 13. By "Aganemmon," Far East.		CASES
H. A. Astlett & Co., Inc.	716	
Baird Rubber & Trading Co., Inc.	251	
General Rubber Co.	3,982	
L. Littlejohn & Co., Inc.	1,516	
Meyer & Brown, Inc.	1,307	
H. Muehlstein & Co., Inc.	*109	
Poel & Kelly, Inc.	51	
Raw Products Co.	768	
Charles T. Wilson Co., Inc.	100	

JULY 14. By "Silver Elm," Far East.		CASES
H. Muehlstein & Co., Inc.	703	

JULY 15. By "Pres. Adams," Far East.		CASES
H. A. Astlett & Co., Inc.	420	
Baird Rubber & Trading Co., Inc.	830	
Haldane Bierrie & Co., Inc.	250	
Hood Rubber Co.	*166	
L. Littlejohn & Co., Inc.	1,519	
Meyer & Brown, Inc.	1,650	
Meyer & Brown, Inc.	*250	
H. Muehlstein & Co., Inc.	1,164	

JULY 16. By "Gothic Prince," Far East.		CASES
H. A. Astlett & Co., Inc.	1,323	
Baird Rubber & Trading Co., Inc.	1,241	
Haldane Bierrie & Co., Inc.	53	
Hood Rubber Co.	*480	

## Africans

JULY 25. By "Pipestone County," Far East.		CASES
Hood Rubber Co.	*611	

## Balata

JUNE 22. By "Thespiis," Brazil.		CASES
Paul Bertuch & Co., Inc.	33	
JULY 8. By "Justine," Brazil.		CASES
General Rubber Co.	31	

## Guayule

JULY 4. By "Panuco," Mexico.		CASES
Continental Rubber Co. of New York	1,120	
JULY 18. By "Agwistar," Mexico.		CASES
Continental Rubber Co. of New York	1,620	
JULY 19. By "Stal," Mexico.		CASES
Baird Rubber & Trading Co., Inc.	560	
Continental Rubber Co. of New York	1,620	

## World Production and Consumption of Crude Rubber

World Production		United States		Retained for Consumption		Average Yearly Price Per Pound, United States	
Year	Total Long Tons	Plan-tation Africa Long Tons	Im-ports Long Tons	Reex-ports Long Tons	Amount Long Tons	Per Cent of World Production	Fine Para- lars
1905	59,494	174	59,320	28,637	1,616	27,021	45.4
1906	62,581	577	62,004	30,316	1,698	28,618	45.7
1907	67,170	1,157	66,013	30,649	1,832	28,817	42.9
1908	66,566	1,796	64,770	34,058	1,655	32,403	48.7
1909	73,756	3,386	70,370	41,990	2,156	39,794	54.0
1910	80,746	7,269	73,477	45,038	2,764	42,274	52.4
1911	82,829	14,383	68,446	36,987	2,523	34,468	41.6
1912	103,947	30,113	73,834	52,705	2,456	50,249	48.3
1913	115,001	51,721	63,280	51,732	1,881	49,851	43.3
1914	121,205	73,153	48,052	63,868	2,618	61,250	50.5
1915	169,017	114,277	54,740	98,876	2,082	96,794	57.3
1916	210,079	158,993	51,086	120,576	4,098	116,478	55.4
1917	277,938	221,187	56,751	181,089	4,000	177,089	63.7
1918	217,511	180,800	36,711	145,518	2,746	142,772	65.6
1919	398,998	348,574	50,424	239,259	2,282	236,977	59.4
1920	341,135	304,671	36,464	252,922	4,160	248,762	72.9
1921	300,649	276,746	23,903	185,394	5,716	179,678	59.8
1922	406,110	378,232	27,878	301,076	4,809	296,267	73.0
1923	406,423	379,738	26,685	309,144	8,772	300,372	73.9
1924	418,660	392,264	26,396	328,056	10,309	317,747	75.9
1925	505,000	470,000	35,000	396,642	14,827	381,815	75.6

NET IMPORTS OF CRUDE RUBBER BY THE PRINCIPAL RUBBER CONSUMING COUNTRIES<sup>1</sup>

Country	1919 Long Tons	1920 Long Tons	1921 Long Tons	1922 Long Tons	1923 Long Tons	1924 <sup>2</sup> Long Tons	1925 <sup>3</sup> Long Tons
Total	335,497	358,840	302,346	396,910	414,210	418,174	500,704
United States	236,977	248,762	179,678	296,267	300,372	317,747	381,815
United Kingdom <sup>4</sup>	42,530	56,972	42,116	11,164	12,536	11,110	4,061
France <sup>5</sup>	20,300	16,606	14,701	27,660	31,108	34,488	36,911
Germany <sup>6</sup>	4,000	13,400	22,428	27,551	19,436	22,727	33,937
Italy <sup>7</sup>	10,200	6,300	4,000	6,500	8,490	8,764	11,412
Canada <sup>8</sup>	9,500	11,300	8,259	9,353	13,255	14,420	19,825
Japan <sup>9</sup>	12,000	5,500	23,164	16,581	17,318	19,612	12,743

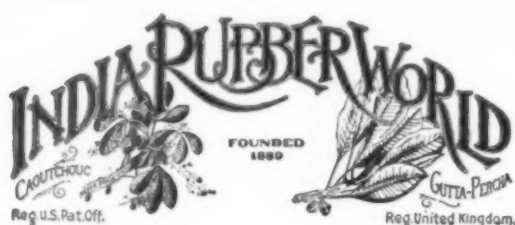
Source: Bureau of Foreign and Domestic Commerce, except as noted.

<sup>1</sup>Bureau of Labor Statistics, Department of Labor.<sup>2</sup>Commercial Research Department, United States Rubber Company, except 1923 and 1924, which were compiled for the India Rubber World.<sup>3</sup>Excluding Venezuela.<sup>4</sup>Estimated.<sup>5</sup>Statistics for 1913 from Commerce Monthly; for 1919 to 1923, from "World's Rubber Position," published by W. H. Rickinson & Son.<sup>6</sup>Figures for 1913 include reclaimed and waste rubber; later figures relate to crude rubber only.<sup>7</sup>Minus quantity.<sup>8</sup>Figures for 1913 to 1918 relate to gross imports.<sup>9</sup>Including gutta percha.<sup>10</sup>Reexports not deducted.<sup>11</sup>Official statistics.

## Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

High Pressure Pneumatic Casings												
Cord			Fabric			Balloon Casings			Solid and Cushion Tires			
	In- ventory*	Produc- tion	Total Ship- ments	In- ventory*	Produc- tion	Total Ship- ments	In- ventory*	Produc- tion	Total Ship- ments	In- ventory*	Produc- tion	Total Shi- ments
Twelve mos. 1925.. 1926	3,723,296	23,631,807	22,685,933	607,681	6,433,865	7,211,608	1,775,428	15,567,644	14,628,137	148,080	758,900	800,395
January.....	4,453,490	1,621,383	1,045,302	810,883	402,784	184,951	2,195,922	1,416,409	1,000,490	170,674	57,928	34,361
February.....	4,907,181	1,796,189	1,187,990	978,152	254,537	103,127	2,487,498	1,598,246	1,285,999	196,477	59,318	29,629
March.....	5,159,199	1,840,268	1,526,416	1,217,416	396,746	218,490	2,626,745	1,855,022	1,676,170	218,991	47,218	37,369
April.....	5,187,115	1,597,394	1,622,690	1,327,251	300,849	193,376	2,831,328	2,111,056	1,919,060	214,115	49,401	51,025
May.....	4,868,505	1,492,951	1,848,177	1,288,434	189,908	236,740	3,100,464	2,084,687	1,823,411	210,525	44,302	46,693
High Pressure Inner Tubes						Balloon Inner Tubes			Cotton and Rubber Consumption in casings, tubes, solid and cushion tires			
	In- ventory*	Produc- tion	Total Ship- ments	In- ventory*	Produc- tion	Total Ship- ments			Cotton Rubber Pounds		Crude Rubber Pounds	
Twelve mos. 1925.. 1926	6,489,331	45,864,008	45,887,316	1,995,277	16,096,518	14,856,699						
January.....	8,297,117	3,537,722	1,706,680	2,473,366	1,569,248	1,085,352	Twelve mos. 1925.. 1926		168,295,927		552,389,272	
February.....	9,966,723	3,316,739	1,568,305	2,850,865	1,801,922	1,233,633	January.....		13,197,979		44,527,984	
March.....	11,106,395	3,076,338	1,936,927	3,241,677	2,196,118	1,803,394	February.....		13,250,686		43,160,777	
April.....	11,629,673	2,293,701	1,785,173	3,875,828	2,620,937	2,002,765	March.....		14,197,612		45,497,208	
May.....	11,405,939	2,123,922	2,568,471	4,449,433	2,488,625	2,159,744			1,926,440		43,800,440	

\*As of December 31, 1925. Compiled from Rubber Association figures representing 75 per cent of the industry.



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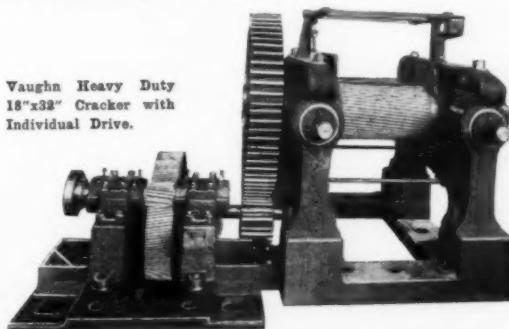


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## Our Publicity Page

### *The Importance of Rubber*

A well-known American rubber manufacturer recently expressed the opinion that the world could more easily do without steel than rubber. Although this view is somewhat novel it is none the less true. Rubber is basically essential to modern civilization in its many aspects, particularly in the fields of industry and automotive transportations.

The story of these developments as unfolded for the past 37 years has been recorded month by month in *The India Rubber World*. This service is unique in industrial journalism and has resulted in the accumulation of an authentic record of rubber progress for current and future reference found in no other publication. It has served the industry as a text book of current rubber technology and as such is appreciated by manufacturers, factory executives and operators, chemists, and technical experts the world over.

### *The Technology of Rubber*

As an illustration of the scope of this technical service the high spots in the record for 1925 may be mentioned. *The India Rubber World* in that year contained twenty-four original contributions by experts on the practical manufacture of rubber products beside 36 pages of chemical papers selected from the work of the world's leading rubber chemists. In addition 224 foreign and domestic published technical papers were cited and abstracted. This current bibliography has proved most useful for rubber factory chemists and those engaged in research.

These technical features have attracted many new readers among rubber goods manufacturers, purchasing agents, chemists, engineers, superintendents, foremen, etc.

### *Leaders in the Industry*

Upon such men as these the industry depends for its development in the future, therefore they constitute the most attentive and appreciative audience that any advertiser can address. Those who have to offer materials, machinery, equipment, processes or services the use of which will facili-

tate their work and help them to attain better results can depend upon the cordial interest and initiative of these readers of *The India Rubber World*.

### *Advertising Pages of Prime Interest*

It is a well-known fact that alert superintendents and engineers instinctively scan each month our advertising pages for new materials, appliances, etc., even before they read the text. This condition is what the advertiser most desires because such interest guarantees for his sales message critical attention of men who make decisions for their organizations.

The world wide favor and esteem in which *The India Rubber World* has been held for nearly two score years by the rank and file of the rubber industry makes it the most direct and effective medium through which to enlist the interest of the men in the purchasing force of the industry.

### *Aid for the Advertiser*

The advertising department of the paper is prepared to co-operate with any advertiser and to supply suggestions on copy and typographical arrangement for the most effective appeal to the trade.

### *Recent Progress*

Many potent influences have stimulated advances in the manufacturing division of the rubber industry within the past few years and the same forces are still acting. As examples of their manifestation we have the realization of new and better methods in compounding due to improved accelerators of vulcanization, anti-oxidants, scientific reinforcing agents, colors, etc. In tire development may be cited the advance in latex cord impregnation and the perfection of the balloon tire.

These and other advancements have made notable the recent past of rubber manufacturing and unquestionably will be succeeded by others of vital importance. *The India Rubber World* invites advertisers to share its forward looking attitude and profit by addressing through its advertising pages the men who are advancing the rubber industry.

# Baird Rubber & Trading Co.

233 BROADWAY, NEW YORK

Telephone, Whitehall 6890

Cable Address: CHAUNBAIR, NEW YORK

## CRUDE RUBBER and GUAYULE

1, 1926

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